

8E-0796/3681

ORIGINAL



RECEIVED
OPPT CRIC

CHEMICAL MANUFACTURERS ASSOCIATION

96 JUL -3 AM 11:13

July 3, 1996

Document Control Office
TSCA Document Receipts
Office of Prevention and Toxics
U.S. Environmental Protection Agency
Room G-099, Mail Code 7404
401 M Street, S. W.
Washington, D. C. 20460



8EHQ-96-13681

Contains No CBI

Attn.: TSCA 8(e) Coordinator

Dear Sir/Madam:

On behalf of its Ethylbenzene Panel, the Chemical Manufacturers Association submits this notice in accordance with Section 8(e) of the Toxic Substances Control Act (TSCA) and EPA's 1991 Section 8(e) Reporting Guide, although CMA and the members of the Ethylbenzene Panel have not determined that the results of the enclosed report indicate an unreasonable risk of injury to health or the environment. The information being submitted is based on an National Toxicology Program (NTP) working group report. It is unclear whether this report is considered an official report published or made available to the general public by a Federal agency and therefore need not be reported in accordance with EPA's "TSCA Section 8(e); Notice of Clarification and Solicitation of Public Comment" as described in 58 Fed. Reg. 37735 (July 13, 1993).

This notice is based on preliminary data from an NTP lifetime bioassay in rats and mice. In these studies mice and rats were exposed to 0, 75, 250, or 750 ppm ethylbenzene (CAS Number 100-41-4) 6 hours per day, 5 days per week for 104 weeks. Tumor increases were reported in male rat kidney, male mouse lung and female mouse liver. Enclosed are copies of NTP pathology working group summaries and pathology tables containing these findings.

The members of the Ethylbenzene Panel are ARCO Chemical Company, Amoco Chemical Company, Chevron Chemical Company, The Dow Chemical Company, Fina Oil and Chemical Company, GE Plastics, Huntsman Corporation, Rexene Corporation and Sterling Chemicals, Inc.

If you have any questions, please call me at 703/741-5617.

Yours truly,

Elizabeth J. Moran, Ph.D.
Manager, Ethylbenzene Panel
Director, CHEMSTAR Panels



88960000161

RECEIVED
OPPT CRIC
96 JUL -3 AM 11:13

Attachments
ebtscas8e.doc

RECEIVED
OPPT CBIC

96 JUL -3 AM 11:13

CHAIRPERSON'S REPORT
PATHOLOGY WORKING GROUP REVIEW
ETHYLBENZENE (C56393B)
CHRONIC INHALATION STUDY IN F344 RATS
CONDUCTED AT
IIT RESEARCH INSTITUTE

Date of the Pathology Working Group Review: July 13, 1995

Participants: Ronald Herbert, D.V.M., Ph.D.; NIEHS
James Hailey, D.V.M.; NIEHS
Darlene Dixon, D.V.M., Ph.D.; NIEHS
Ann Radovsky, D.V.M., Ph.D.; NIEHS
Doug Wolf, D.V.M., Ph.D.; CIIT
Mikinori Torii, D.V.M., Ph.D.; NIEHS
Cynthia Shackelford, D.V.M., Ph.D.; EPL
(QA Pathologist)
Normal Barlow, NCSU
(Observer)
John Curtis Seely, D.V.M.; PATHCO
(PWG Chairperson)

STUDY DESIGN

Male and female F344 rats were exposed to ethylbenzene by inhalation (whole-body exposure) to target concentrations of 0, 75, 250, or 750 ppm for 6 hours, 5 days/week for 104 weeks. Table 1 summarizes the animal disposition for the entire study.

TABLE 1
Male Rats

Dose (PPM)	0	75	250	750
Animals in Study	50	50	50	50
Moribund Sacrifice	28	20	26	26
Natural Deaths	7	16	11	22
Terminal Sacrifice	15	14	13	2
Anim. Exam. Micro.	50	50	50	50

Female Rats

Dose (PPM)	0	75	250	750
Animals in Study	50	50	50	50
Moribund Sacrifice	7	14	8	6
Natural Deaths	12	5	8	8
Terminal Sacrifice	30	31	34	35
Other	1	0	0	1
Anim. Exam. Micro.	50	50	50	50

SUMMARY

Administration of ethylbenzene by inhalation, under the conditions of this study, was associated with the following histopathologic lesions.

1. An increased severity of renal nephropathy in the high dose animals, particularly in the males. This lesion was accompanied by an increased incidence of transitional epithelial hyperplasia. In addition, lesions such as parathyroid gland hyperplasia and uremic related lesions in the lungs (hemorrhage, congestion, edema, inflammation) were increased in the high dose males.
2. The presence and increased incidence of renal tubule proliferative (hyperplasia, adenoma, carcinoma) lesions in the exposed males, particularly in the high dose males. Equivocal increases of some proliferative lesions were present in the mid and high dose females.
3. An increased incidence, not dose-related, of prostate gland inflammation in all dose groups of treated males.
4. An increased incidence of cystic degeneration in the liver of high dose males.
5. An increased incidence of bone marrow hyperplasia in the low and high dose male animals.

Evaluation of the strength and significance of the pathology findings must await generation of the final tables and the statistical analyses of the data.

CONDUCT OF THE PATHOLOGY WORKING GROUP

Prior to the PWG, the chairperson reviewed the pathology incidence tables, the original study pathologists' (SP) narrative, the quality assessment (QA) report prepared by the quality assessment pathologist (QAP) and microscopic slides of potential target organs and selected lesions with discrepancies in diagnoses between the SP and QAP.

The following potential target organs and/or specific organ diagnoses were reviewed by the QAP from all control and treated rats.

<u>Male Rats</u>	<u>Female Rats</u>
Kidney	Kidney
Liver	Liver
Lung	Lung
Nose	Nose

Male Rats

Testis, Interstitial Cell - Adenoma
Testis, Interstitial Cell, Bilateral - Adenoma
Testis, Bilateral, Interstitial Cell - Adenoma
Testis, Interstitial Cell - Hyperplasia
Testis, Bilateral, Interstitial Cell - Hyperplasia
Prostate - Inflammation
Bone Marrow - Hyperplasia
Bone Marrow, Erythroid Cell - Hyperplasia
Bone Marrow, Myeloid Cell - Hyperplasia
Parathyroid Gland - Hyperplasia

Female Rats

Pituitary Gland, Pars Distalis - Hyperplasia
Pituitary Gland, Pars Distalis - Angiectasis
Pituitary Gland, Pars Distalis - Cyst
Pituitary Gland, Pars Distalis - Adenoma
Pituitary Gland, Pars Distalis - Adenoma, Multiple

All tumor diagnoses from all animals in all groups were reviewed.

The PWG chairperson selected a set of 131 slides for review by the PWG. These slides included representative examples of potential treatment-related lesions, lesions for which there was a difference of opinion between the SP and QAP and lesions selected because of general interest (see Chairperson's PWG Worksheets). All slides were examined by each participant without knowledge of the dose group or diagnoses rendered by the SP and QAP. Final diagnoses for the lesions presented were determined by the consensus of the PWG participants.

PWG RESULTS

Kidney

Representative examples of renal tubule proliferative lesions and/or discrepancies within the kidney were shown to the PWG. In addition, slides of renal nephropathy were shown to the PWG to confirm the spectrum of changes associated with

the enhanced severity noted in high dose males and females. In general, there was good overall agreement among the PWG participants in the diagnosis of these lesions.

The PWG confirmed most of the SP's diagnoses associated with nephropathy. The increased severity in high dose male animals was even more toxicologically significant due to the reduced survival in these animals. Both the high dose males and females had approximately a one grade higher severity of nephropathy than the controls. Moderate to marked nephropathy was characterized by involvement of most of the renal parenchyma with a spectrum of changes including dilated tubules containing eosinophilic hyaline casts or cellular debris, interstitial fibrosis, foci of mononuclear cells and varying amounts of glomerular degeneration. Tubule mineralization and cortical cysts lined by flattened epithelium were diagnosed separately from nephropathy. During the QA review, the QAP diagnosed transitional epithelial hyperplasia when small, focal to multifocal epithelial proliferative lesions were present on the renal papillae and protruded into the renal pelvis. Following the QA review, these lesions were particularly increased in the high dose males. Transitional epithelial hyperplasia, which often is seen with cases of advanced nephropathy, was confirmed by the PWG.

During the PWG, all cases involving a diagnosis of a renal tubule proliferative (hyperplasia, adenoma, carcinoma) lesion were examined. The following criteria were used to diagnose the proliferative lesions within the kidney.

Renal Tubule, Hyperplasia

Hyperplasias appeared to be within tubules which were not surrounded by a thickened basement membrane indicative of regeneration associated with nephropathy. Hyperplastic tubules varied in diameter from slightly greater up to approximately 2 to 3 times the diameter of a normal tubule. Hyperplastic epithelial cells usually formed solid clusters and appeared more pleomorphic than normal tubular epithelium. In general, the tinctorial qualities of the cytoplasm of hyperplastic epithelial cells varied but it tended to be more basophilic than the cytoplasm of adjacent renal tubular epithelium. Nuclei tended to be larger with prominent nucleoli.

Renal Tubule, Adenoma

Adenomas consisted of cells with a similar morphologic appearance to those of hyperplasia but differed from hyperplasia by being larger (usually 5 or more tubular diameters) and generally having a more complex structure. Adenomas often consisted of multiple variably sized tubular-like structures or solid nests of epithelial cells that were separated by fine bands of fibrous tissue. In some adenomas there appeared to be a disruption of the basement membrane by the epithelial cells.

Renal Tubule, Carcinoma

Carcinoma was differentiated from adenoma in that it was larger, less discrete, and had a more prominent vascular supply. Hemorrhage, necrosis and a locally invasive growth pattern were often prominent features of tubular cell carcinoma. Cellular anaplasia and/or atypia characterized the neoplastic cells. Patterns of neoplastic cell growth were frequently varied.

P
action

Following the PWG review, many of the reported proliferative lesions were confirmed, but several of the reported hyperplasias were not confirmed. Renal tubule hyperplasia was often difficult to differentiate from some of the changes associated with nephropathy. The incidence of renal tubule hyperplasia, adenoma and carcinoma was confirmed to be increased in the treated males, particularly the high dose males. The combined incidence of adenoma and carcinoma in all treated male dose groups was more than that of the normal NTP historical control data base for similar studies. Treated high dose females had an increased severity of nephropathy, but there was no unequivocal treatment association with any neoplastic lesions in their kidneys. Based on a clear treatment effect on neoplastic lesions in the high dose males and equivocal findings of neoplasia in the kidneys of female rats, the PWG recommended that kidney step-sections of the kidneys of female rats be made and evaluated.

The PWG also examined histological sections of parathyroid glands and lungs because of the reported increased incidence of parathyroid gland hyperplasia and various pulmonary manifestations of uremia such as congestion, edema, hemorrhage and inflammation in the high



dose male animals. These lesions, for the most part, were confirmed by the PWG and believed to represent secondary lesions due to the increased severity of nephropathy.

Liver

Representative examples of several lesions within the liver were shown to the PWG. These included angiectasis in female animals and cystic degeneration in male animals.

Angiectasis was characterized as one or more lesions consisting of irregular, dilated sinusoids containing erythrocytes. Within larger angiectatic lesions some hepatocytes were atrophic. Angiectasis appeared to be inconsistently diagnosed by the SP since the PWG confirmed several examples in control females which were previously not diagnosed. These lesions were confirmed in animals with or without mononuclear cell leukemia (MCL). Angiectasis has been reported as a common lesions in the F344 rat.

Cystic degeneration was confirmed by the PWG in several control and high dose male animals with and without MCL. These lesions were characterized as a multilocular cystic lesion containing a finely granular or flocculent eosinophilic material. The cyst-like structures were not lined by either epithelial or endothelial cells. The toxicological significance of the higher incidence of cystic

degeneration in the high dose males was not clear. It was suggested that perhaps the reduced incidence of MCL (due to the poor survival in high dose males), may have unmasked or somehow altered the incidence of cystic degeneration within the liver.

Bile duct hyperplasia appeared to be inconsistently diagnosed during the study and its reported incidence slightly increased in the treated male animals. The PWG chairperson showed the PWG participants several cases of similar lesions which were not diagnosed in the controls. The PWG confirmed that these lesions were similar and recommended that the few examples of bile duct hyperplasia be removed from the study.

During the QA review, the QAP opted to remove the severity grades of liver foci that the SP had diagnosed. The PWG chairperson, in general, agreed with the SP's diagnoses and grading system of liver foci. The SP appeared to be diagnostically consistent. Liver foci designated as minimal represented one or more small localized lesions, usually a hepatic lobule or less in size, which showed tinctorial variation from surrounding hepatic parenchyma. Hepatocytes within these minimal foci showed little cellular pleomorphism and merged with adjacent parenchymal without any significant compression. Foci designated as moderate were also noted as

one or more larger areas of tinctorial change which often had some partial compression at its borders. In addition, affected hepatocytes had an increase in cellular pleomorphism which resulted in larger cell size. Foci designated as mild were single to multiple lesions which had morphologic characteristics in between those of minimal and moderate. Marked foci, if present, usually represent lesions which are borderline and need to be differentiated from hepatocellular adenoma.

Prostate Gland

Several examples of inflammation within the prostate gland were shown to the PWG because of the reported increased incidence in the treated males which did not appear to be dose-related. Prostatic inflammation was characterized by a spectrum of changes including the infiltration of predominantly mononuclear inflammatory cells into glandular acini and interstitium, increased interstitial fibrosis and loss of secretory material in affected areas. Prostatic inflammation was present in approximately one-fifth of the control males. The severity of prostatic inflammation was approximately the same across all dose groups and controls. The toxicological significance of prostatic inflammation was unclear but the PWG did not believe the increased incidence

was due to a direct chemical effect. A possible mechanism might be from an increased predisposition due to an animal's debilitated condition (ie. nephropathy) resulting in lower resistance.

Bone Marrow

The PWG was shown several slides of bone marrow because the SP reported an increased incidence of hyperplasia in the low and high dose males. During the QA review, the QAP tended to group erythroid and myeloid hyperplasia under the general diagnosis of hyperplasia. Following the PWG examination of the microslides, hyperplasia was confirmed. In addition, the PWG agreed with the QAP that the separate diagnoses of erythroid and myeloid hyperplasia should be changed to hyperplasia since actual determination of cellular morphology was difficult with routine H&E slides. The majority of the bone marrow hyperplasias, however, showed a trend towards erythroid differentiation.

The toxicologic significance of bone marrow hyperplasia in the low and high dose males was not known but was not believed to represent a direct chemical effect.

Pituitary Gland

Representative examples of proliferative lesions of the pituitary gland, primarily of females, were examined by the PWG because of the number of discrepancies which existed between the SP, QAP and PWG chairperson. In addition, angiectasis and cysts were often diagnosed in association with many of the proliferative lesions. None of the reported neoplasms appeared to be related to chemical exposure.

Following the PWG review, it was recommended to remove diagnoses such as angiectasis, cysts, and hyperplasia if they were clearly adjacent to, or associated with, a neoplasm. The same recommendation was given for pituitary angiectasis and/or cysts associated with hyperplasia (ie. that pituitary angiectasis and cysts would not also be diagnosed in the same gland as hyperplasia). Hyperplasia was diagnosed in the same gland containing a neoplasm if the two were clearly separated and there was no evidence of histologic continuity.

MISCELLANEOUS

A number of lesions (neoplastic and non-neoplastic) were examined by the PWG to either confirm their incidence or because a diagnostic discrepancy existed. In most instances, the neoplasms were diagnosed either once or, if several times, they were from different dose groups, and were not considered to be related to chemical exposure.

HISTOTECHNIQUE

The overall quality of the slides as determined by the Histotechnique Quality Assessment was good.

John Curtis Seely, D.V.M.
John Curtis Seely, D.V.M.
Diplomate, American College
of Veterinary Pathologists

October 11, 1995
Date



RECEIVED
OPPT CRIC
96 JUL -3 AM 11:13

CHAIRPERSON'S REPORT
PATHOLOGY WORKING GROUP REVIEW
ETHYLBENZENE (C56393B)
CHRONIC INHALATION STUDY IN B6C3F1 MICE
CONDUCTED AT
IIT RESEARCH INSTITUTE

Date of the Pathology Working Group Review: December 12, 1995

Participants: Gary Boorman, D.V.M., Ph.D.; NIEHS
Ronald Herbert, D.V.M., Ph.D.; NIEHS
Ann Radovsky, D.V.M., Ph.D.; NIEHS
Robert Sills, D.V.M., Ph.D.; NIEHS
Russell Cattley, V.M.D., Ph.D.; CIIT
Jurgen Hellmann, D.V.M.; NIEHS
Cynthia Shackelford, D.V.M., Ph.D.; EPL
(QA Pathologist)
Satoshi Asano, Ph.D.; NIEHS
(Observer)
John Curtis Seely, D.V.M.; PATHCO
(PWG Chairperson)

STUDY DESIGN

Male and female B6C3F1 mice were exposed to ethylbenzene by inhalation (whole-body exposure) to target concentrations of 0, 75, 250, or 750 ppm for 6 hours, 5 days/week for 104 weeks. Table 1 summarizes the animal disposition for the entire study.



TABLE 1
Male Mice

Dose (PPM)	0	75.	250	750
Animals in Study	50	50	50	50
Moribund Sacrifice	6	2	5	6
Natural Deaths	15	12	13	13
Other Deaths	1	0	0	1
Terminal Sacrifice	28	36	32	30
Anim. Exam. Micro.	50	50	50	50

Female Rats

Dose (PPM)	0	75	250	750
Animals in Study	50	50	50	50
Moribund Sacrifice	5	6	1	4
Natural Deaths	9	6	8	9
Other Deaths	1	0	1	0
Terminal Sacrifice	35	38	40	37
Anim. Exam. Micro.	50	50	50	50

SUMMARY

Administration of ethylbenzene by inhalation, under the conditions of this study, was associated with the following histopathologic lesions.

1. An increased incidence of alveolar/bronchiolar neoplasms in the lungs of exposed male animals, particularly at the 250 and 750 ppm dose levels, and slightly increased in the 750 ppm females. In addition, metaplasia of the alveolar epithelium was also diagnosed primarily in the exposed males.
2. The incidence of hepatocellular adenomas/carcinomas in the liver were increased in the 750 ppm females. In addition, lesions such as hepatocellular syncytial alteration, hypertrophy and necrosis were also confirmed in exposed male animals.



3. An increased incidence of thyroid follicular cell hyperplasia in exposed males and females, particularly in the 250 and 750 ppm animals.
4. An increased incidence of pars distalis hyperplasia of the pituitary gland in the 250 and 750 ppm exposed females.

Evaluation of the strength and significance of the pathology findings must await generation of the final tables and statistical analyses of the data.

CONDUCT OF THE PATHOLOGY WORKING GROUP

Prior to the PWG, the chairperson reviewed the pathology incidence tables, the original study pathologists' (SP) narrative, the quality assessment (QA) report prepared by the quality assessment pathologist (QAP) and microscopic slides of potential target organs and selected lesions with discrepancies in diagnoses between the SP and QAP.

The following potential target organs and/or specific organ diagnoses were reviewed by the QAP from all control and treated rats.

Male Mice
Kidney*
Lung
Nose
Thyroid
Liver

Female Mice
Kidney*
Lung
Nose
Thyroid
Liver
Pituitary Gland

*The kidneys were reviewed in order to confirm the incidence and severity of nephropathy.



In addition, the following organs/tissues were examined for all animals in all groups for the listed lesions.

Male Mice

Heart - Cardiomyopathy
Heart - Inflammation

Female Mice

Heart - Cardiomyopathy

All tumor diagnoses from all animals in all groups were also reviewed.

The PWG chairperson selected a set of 140 slides for review by the PWG. These slides included representative examples of potential treatment-related lesions, lesions for which there was a difference of opinion between the SP and QAP and lesions selected because of general interest (see Chairperson's PWG Worksheets). All slides were examined by each participant without knowledge of the dose group or diagnoses rendered by the SP and QAP. Final diagnoses for the lesions presented were determined by the consensus of the PWG participants.

PWG RESULTS

Lung

Representative examples of alveolar/bronchiolar proliferative lesions and/or discrepancies within the lung were shown to the PWG. These lesions, particularly adenomas,

were reported to be increased in the 250 and 750 ppm males. However, no concurrent increase in alveolar epithelial hyperplasia was reported.

The following criteria were used to diagnose the proliferative lesions within the lungs.

Alveolar Epithelium - Hyperplasia

1. Localized or discrete lesion.
2. Alveolar architecture retained.
3. Alveolar septa lined by cuboidal cells.
4. Lack of cellular or nuclear anaplasia.
5. Not clearly associated with areas of chronic inflammation.

Alveolar-Bronchiolar Adenoma

1. Alveolar spaces filled by proliferating epithelial cells.
2. Cells appear cuboidal or columnar.
3. Normal nuclear:cytoplasmic ratio.
4. Edges of lesion may be irregular as the growth extends into adjacent airways.
5. Some adenomas are circumscribed and compress adjacent tissue.
6. Central part of lesion tends to be more solid.
7. May be papillary formation into air spaces.

Alveolar-Bronchiolar Carcinoma

1. Increased nuclear:cytoplasmic ratio.
2. Cellular and nuclear pleomorphism.
3. Increased numbers of mitotic figures.
4. May have focal areas of cellular anaplasia.
5. Invasion of airways, blood vessels, or pleural surfaces.
6. Extension into mediastinum or distant metastases.
7. Mesenchymal metaplasia may be present.

Following the PWG review, many of the reported proliferative lesions diagnosed by either the SP and/or QAP were confirmed. Therefore, the apparent increased incidence of alveolar-bronchiolar neoplasms in the exposed male and female higher dose groups was confirmed. Although more cases of alveolar epithelial hyperplasia occurred in exposed animals, the overall group incidences were low and not dose-dependent.

The PWG also examined sections of lungs from exposed animals in which the QAP had diagnosed alveolar epithelial metaplasia. During the QA review, this lesion was noted only in exposed males with a dose dependent incidence. Following the PWG review, metaplasia was confirmed as an exposure related lesion. In addition, the PWG confirmed alveolar epithelial metaplasia in one high dose female. Histologically, metaplasia was characterized by the presence of cells morphologically similar to bronchiolar epithelial cells which lined alveolar septa immediately adjacent to the terminal bronchioles. Although bronchiolar epithelial cells extended a short distance along the alveolar septa in some control mice, they extended further and became more prominent along the alveolar septa in ethylbenzene exposed animals.



For the most part, the severity of this change was minimal. The QAP suggested that this change was similar to alveolar bronchiolization.

During the QA review, the QAP noted that some of the alveolar/bronchiolar adenomas appeared to be located adjacent to terminal bronchioles just as was metaplasia.

Liver

Representative examples of several liver slides containing discrepancies between the SP and QAP of potential treatment-related lesions were shown to the PWG. These discrepancies involved the diagnoses of hepatocellular syncytial alteration, hypertrophy and necrosis. Following the PWG review, all three lesions were confirmed. These lesions were present, for the most part, in exposed male animals and were minimal in severity.

Hepatocellular syncytial alteration was characterized by the presence of large hepatocytes containing multiple (greater than five) nuclei. A few of these cells may be commonly seen in the livers of aging B6C3F1 mice of both sexes. However, in the minimal cases confirmed by the PWG, the syncytial cells were present in most fields of view and were clearly larger and had more nuclei. No positive viral serology, which might account for syncytial cells, was present during the study.



Hepatocellular hypertrophy was characterized by the presence of enlarged hepatocytes with abundant, variably staining cytoplasm and located primarily around central veins. Hepatocellular necrosis was evident as single cell necrosis most likely involving severely hypertrophic cells. This type of change was different from "Liver - Necrosis" which tended to be discrete foci of hepatocellular necrosis with or without inflammatory cell infiltrates.

During the PWG, most of the confirmed examples of syncytial alteration, hypertrophy and necrosis appeared minimal in severity and several of the cases shown to the PWG were below the diagnostic threshold of the PWG participants. Therefore, the PWG recommended that the PWG chairperson reread all liver slides for syncytial alteration, hypertrophy and necrosis based upon the minimal severity criteria as demonstrated in animals HM/302 and HM/317.

A number of liver slides were also reviewed by the PWG because of discrepancies involving the diagnosis of proliferative lesions within the liver. Specifically, a number of discrepancies involved the diagnosis of hepatocellular hyperplasia versus foci of cellular alteration (cell focus), adenoma, or carcinoma. Following the PWG review, lesions diagnosed as hepatocellular hyperplasia by the SP were confirmed as either a cell focus or as a neoplasm

by the PWG participants. The following criteria were used to diagnose the proliferative lesions within the liver.

Foci of Cellular Alteration (Cell Focus)

1. Localized lesions.
2. Tinctorial variation from surrounding hepatic parenchyma.
3. Foci range from less than a hepatic lobule to up to three or four lobules.
4. Hepatocytes merge with adjacent parenchyma without producing compression.
5. Subclassified as clear cell, eosinophilic, basophilic, or mixed cell.

Hepatocellular Adenoma

1. Usually a discrete lesion which compressed adjacent parenchyma.
2. Well differentiated cells which were eosinophilic, basophilic or vacuolated.
3. Absence of normal hepatic lobular architecture.
4. Uneven growth patterns; some cells appeared hypertrophic.

Hepatocellular Carcinoma

1. Distinct trabecular or adenoid pattern.
2. Cells were poorly differentiated or anaplastic.
3. Histologic evidence of local invasiveness or metastasis.
4. Hepatocellular carcinomas can arise within adenomas.

The incidence of hepatocellular proliferative lesions appeared similar across all male dose groups, but slightly increased in the 750 ppm females.

During the QA review, the QAP opted to remove the severity grades of liver foci that the SP had diagnosed. The PWG chairperson, in general, agreed with the SP's diagnoses



and grading system of liver foci. The SP appeared to be diagnostically consistent. Liver foci designated as minimal represented one or more small localized lesions, usually a hepatic lobule or less in size, which showed tinctorial variation from surrounding hepatic parenchyma. Hepatocytes within these minimal foci showed little cellular pleomorphism and merged with adjacent parenchymal without any significant compression. Foci designated as moderate were also noted as one or more larger areas of tinctorial change which often had some partial compression at its borders. In addition, affected hepatocytes had an increase in cellular pleomorphism which resulted in larger cell size. Foci designated as mild were single to multiple lesions which had morphologic characteristics in between those of minimal and moderate. Marked foci, if present, usually represented lesions which were borderline and had to be differentiated from hepatocellular adenoma.

Thyroid Gland

Examples of follicular cell hyperplasia and a number of discrepancies involving proliferative lesions of follicular cells were shown to the PWG. Follicular cell hyperplasia was reported to be increased in ethylbenzene exposed males and



females, particularly at the higher concentrations. However, an increase in follicular cell neoplasms was not observed.

There was good agreement by the PWG in the diagnosis of follicular cell proliferative lesions. The following criteria were used to diagnose the proliferative lesions.

Follicular Cell Hyperplasia

1. Increased cellularity (focal with simple papillary infoldings of the follicular epithelium or diffuse with enlargement of the gland).
2. Cells hypertrophied but generally uniform in morphology.

Follicular Cell Adenoma

1. Discrete and well-demarcated mass; generally not encapsulated.
2. Compression of adjacent tissue.
3. Growth pattern that varies from normal (complex papillary or follicular).
4. Cells well differentiated but abnormal in size and staining quality.
5. Cell nuclei abnormal in size and chromatin content (e.g., small and hyperchromatic or large with prominent nucleoli).
6. No invasion of capsule, adjacent tissue, or metastases.

Follicular Cell Carcinoma

1. Obvious mass without well-demarcated boundaries.
2. Disorganized or varied growth pattern.
3. Growth in solid clusters or sheets.
4. Anaplasia; cellular pleomorphism and atypia.
5. Neoplastic cells associated with scirrhous reaction.
6. Invasion of capsule, adjacent tissue, or metastases.

P
ollows

Following the PWG review, follicular cell hyperplasia, typically focal, was confirmed in the ethylbenzene exposed animals. Although the incidence of follicular cell adenomas appeared increased in high dose males, the increased incidence may not be statistically significant.

Pituitary Gland

The PWG reviewed several slides containing proliferative lesions of the pituitary gland because of the reported increased incidences of pars distalis hyperplasia and adenomas in ethylbenzene exposed females.

The following criteria were used by the PWG to diagnose the proliferative lesions of the pituitary gland.

Hyperplasia

1. Focal increase in the number of cells of a single type.
2. Focus is poorly delineated and blends into adjacent normal tissues.
3. No compression at borders.
4. Vascular pattern usually normal; angiectasis sometimes present.
5. Arrangement of cells may be slightly altered.
6. Cells may be normal or hypertrophied.

Adenoma

1. Well-delineated, circumscribed mass of cells.
2. Some compression of adjacent normal tissue.
3. Altered vascular pattern; angiectasis often present.
4. Arrangement of cells is altered and they may be present in solid sheets.
5. Cells may be hypertrophied and may or may not contain secretory granules.
6. Cellular atypia and pleomorphism may be present.

Carcinoma

1. Unequivocal invasion of pars nervosa, brain, or other surrounding tissues.
2. Metastases (usually intracranial).

Following the PWG review, several of the reported adenomas of the pars distalis were downgraded to hyperplasia or angiectasis by the PWG. Therefore, the incidence of pars distalis adenomas were only slightly elevated in the ethylbenzene exposed females. However, the incidence of hyperplastic lesions of the pars distalis was increased in the 250 and 750 ppm females.

Heart and Kidney

Representative examples of hearts and kidneys were shown to the PWG to confirm the diagnoses of cardiomyopathy and nephropathy in these respective organs. Both the incidence of cardiomyopathy and nephropathy were reported to be slightly increased in some groups of exposed animals (particularly males); however, the increased incidences were not dose dependent.

Nephropathy was characterized by the presence of basophilic tubules with thickened basement membranes, occasional tubular dilatation with protein casts and mononuclear cell infiltration. During the QA review, the QAP diagnosed additional cases of nephropathy in most groups, and as a result, the incidence of nephropathy appeared similar to the controls.

Cardiomyopathy was characterized by the presence of degenerative myocardial muscle fibers which appeared deeply eosinophilic with loss of striations. Myocardial degeneration was often accompanied by a variable degree of mononuclear cell infiltration and fibrosis. The incidences of cardiomyopathy in all animals were similar except for higher incidences in the 75 and 250 ppm males and females.

Cardiomyopathy and nephropathy were not considered to be related to ethylbenzene exposure because of their overall minimal severity and lack of dose-related increased incidence.



MISCELLANEOUS

A number of lesions (neoplastic and non-neoplastic) were examined by the PWG to either confirm their incidence or because a diagnostic discrepancy existed. In most instances, the neoplasms were diagnosed either once or, if several times, they were from different dose groups, and were not considered to be related to chemical exposure.

HISTOTECHNIQUE

The overall quality of the slides as determined by the Histotechnique Quality Assessment was good.

John Curtis Seely, D.V.M.
John Curtis Seely, D.V.M.
Diplomate, American College
of Veterinary Pathologists

January 26, 1996

Date

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

CORE STUDY

Facility: I. I. T. Research Institute

Chemical CAS #: 100-41-4

Lock Date: 10/02/92

Cage Range: All

Reasons For Removal: All

Removal Date Range: All

Treatment Groups: Include All

Report: FEIRPT03
Date: 03/14/96
Time: 10:45:33

RECEIVED
OPPT CBIC

96 JUL -3 AM 11:13

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PERINPT03
 Date: 03/14/96
 Time: 10:45:33

	FISCHER 344 RATS FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
DISPOSITION SUMMARY					
Animals Initially In Study	50	50	50	50	50
Early Deaths	7	14	8	8	6
Moribund Sacrifice	12	5	8	8	8
Natural Death					
Survivors	30	31	34	35	
Terminal Sacrifice	1				1
Natural Death					
Missing					
Animals Examined Microscopically	50	50	50	49	
ALIMENTARY SYSTEM					
Intestine Large, Colon	(47)	(49)	(48)	(49)	(49)
Inflammation	1 (2%)	(50)	(47)	(49)	(49)
Intestine Large, Rectum	(49)	(50)	(47)	(49)	(49)
Arteriole, Inflammation	1 (2%)	(50)	(47)	(49)	(49)
Intestine Large, Cecum	(44)	(50)	(47)	(46)	
Inflammation	1 (2%)	(48)	(47)	(46)	
Intestine Small, Ileum	(41)				
Hyperplasia					
Inflammation	(50)	(50)	(50)	(49)	(49)
Liver	3 (6%)	29 (58%)	33 (66%)	6 (12%)	6 (12%)
Angiectasis	23 (46%)	3 (6%)	1 (2%)	29 (59%)	4 (8%)
Basophilic Focus	3 (6%)	3 (6%)	1 (2%)	1 (2%)	1 (2%)
Clear Cell Focus	1 (2%)		1 (2%)		
Congestion					
Degeneration	2 (4%)	1 (2%)	2 (4%)	5 (10%)	
Eosinophilic Focus		3 (6%)	8 (16%)		
Fibrosis		1 (2%)			
Hematopoietic Cell Proliferation	1 (2%)				
Hemorrhage	4 (8%)	4 (8%)	4 (8%)	5 (10%)	
Hepatodiaphragmatic Nodule					
Infiltration Cellular, Lymphocyte					
Inflammation, Acute	3 (6%)	2 (4%)	3 (6%)	1 (2%)	1 (2%)
Inflammation, Chronic	5 (10%)	1 (2%)	1 (2%)	2 (4%)	2 (4%)
Mixed Cell Focus	1 (2%)	12 (24%)	14 (28%)	14 (29%)	
Necrosis	11 (22%)				
Vacuclization Cytoplasmic					
Centrilobular, Degeneration	1 (2%)	1 (2%)			
Portal Vein, Thrombosis					
Mesentery	(7)	(4)	(6)	(7)	
Artery, Degeneration					
Artery, Inflammation	1 (14%)		1 (17%)		
Fat, Necrosis	6 (86%)	4 (100%)	5 (83%)	7 (100%)	

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PERIRPT03
 Date: 03/14/96
 Time: 10:45:33

FISCHER 344 RATS FEMALE

	CONTROL	75 PPM	250 PPM	750 PPM
ALIMENTARY SYSTEM - CONT				
Pancreas	(49)	(50)	(50)	(49)
Cyst	2 (4%)	18 (37%)	18 (36%)	19 (39%)
Inflammation	1 (2%)	(50)	1 (2%)	1 (2%)
Acinus, Atrophy	(49)	(50)	(50)	(49)
Arteriole, Inflammation	1 (2%)		1 (2%)	
Artery, Inflammation	(49)			
Stomach, Forestomach	2 (4%)	3 (6%)	1 (2%)	1 (2%)
Hemorrhage	3 (6%)	1 (2%)	3 (6%)	8 (16%)
Hyperkeratosis	1 (2%)	1 (2%)	1 (2%)	6 (12%)
Hyperplasia	3 (6%)	4 (8%)	1 (2%)	
Inflammation	(49)	(49)	(49)	(49)
Ulcer	1 (2%)			1 (2%)
Stomach, Glandular	5 (10%)	1 (2%)	1 (2%)	2 (4%)
Cyst	1 (2%)			1 (2%)
Hyperplasia	5 (10%)	4 (8%)	1 (2%)	1 (2%)
Inflammation				
Necrosis				
Pigmentation				
Ulcer				
Glands, Cyst				
CARDIOVASCULAR SYSTEM				
Blood Vessel	(49)	(50)	(50)	(49)
Degeneration			1 (2%)	
Inflammation	1 (2%)	(50)	1 (2%)	
Aorta, Inflammation	6 (12%)	1 (2%)	(49)	6 (12%)
Heart				1 (2%)
Cardiomyopathy				
Fibrosis			1 (2%)	
Inflammation			1 (2%)	
Atrium, Inflammation			1 (2%)	1 (2%)
Atrium, Thrombosis				
Endocardium, Hyperplasia				
Myocardium, Hypertrophy				
Valve, Degeneration	1 (2%)	1 (2%)	1 (2%)	
ENDOCRINE SYSTEM				
Adrenal Cortex	(50)	(50)	(50)	(49)
Angiectasis	3 (6%)	3 (6%)	4 (8%)	3 (6%)
Cytoplasmic Alteration	1 (2%)	3 (6%)	1 (2%)	
Degeneration				1 (2%)
Degeneration, Cystic	5 (10%)	3 (6%)	2 (4%)	4 (8%)
Hemorrhage	4 (8%)	5 (10%)	2 (4%)	1 (2%)

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PEIRPT03
 Date: 03/14/96
 Time: 10:45:33

FISCHER 344 RATS FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
ENDOCRINE SYSTEM - CONT				
Hyperplasia	3 (6%)	4 (8%)	2 (4%)	3 (6%)
Hypertrophy	1 (2%)		3 (6%)	1 (2%)
Necrosis			1 (2%)	1 (2%)
Pigmentation	12 (24%)	5 (10%)	12 (24%)	6 (12%)
Vacuolization	(50)	(50)	(50)	(49)
Adrenal Medulla		1 (2%)		
Hemorrhage			2 (4%)	2 (4%)
Hyperplasia	4 (8%)		1 (2%)	
Infiltration Cellular, Lymphocyte		1 (2%)		
Necrosis			1 (2%)	
Parathyroid Gland	(48)	(46)	(42)	(47)
Atrophy	1 (2%)	2 (4%)	4 (10%)	5 (11%)
Hyperplasia	5 (10%)	4 (9%)	(50)	(49)
Pituitary Gland	(49)			
Cyst	1 (2%)			
Infiltration Cellular, Mixed Cell	1 (2%)			
Necrosis				
Pars Distalis, Angiectasis	2 (4%)	16 (33%)	6 (12%)	2 (4%)
Pars Distalis, Cyst	5 (10%)	1 (2%)	3 (6%)	3 (6%)
Pars Distalis, Degeneration				
Pars Distalis, Hemorrhage		2 (4%)		
Pars Distalis, Hyperplasia	11 (22%)	9 (18%)	14 (28%)	17 (35%)
Pars Distalis, Pigmentation		2 (4%)		
Pars Intermedia, Angiectasis		2 (4%)		
Thyroid Gland	(48)	(50)	(50)	(49)
Hyperplasia	1 (2%)		1 (2%)	
Inflammation				
Bilateral, C-Cell, Hyperplasia	5 (10%)	5 (10%)	5 (10%)	5 (10%)
C-Cell, Hyperplasia	1 (2%)		1 (2%)	
C-Cell, Inflammation				
Follicle, Cyst				

GENERAL BODY SYSTEM

None

GENTAL SYSTEM	(47)	(49)	(48)	(47)
Clitoral Gland				
Cyst				
Hyperplasia	4 (9%)	3 (6%)	1 (2%)	1 (2%)
Inflammation	6 (13%)	5 (10%)	4 (8%)	3 (6%)
Bilateral, Hyperplasia	(50)	(50)	(50)	4 (9%)
Ovary	5 (10%)	6 (12%)	5 (10%)	5 (10%)
Cyst				

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
 Study Type: CHRONIC ETHYLBENZENE
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT03
 Date: 03/14/96
 Time: 10:45:33

FISCHER 344 RATS FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
GENITAL SYSTEM - CONT				
Corpus Luteum, Hyperplasia	1 (2%) (50)	(50)	(50)	(49)
Uterus	1 (2%) (2%)	3 (6%)	1 (2%)	4 (8%)
Angiectasis	1 (2%)		1 (2%)	1 (2%)
Hydrometra				
Inflammation				
Endometrium, Cyst				
Vagina				
Fibrosis				
Arteriole, Degeneration				
HEMATOPOIETIC SYSTEM				
Bone Marrow	(49) 1 (2%)	(50)	(50)	(49)
Atrophy	3 (6%)	2 (4%)	1 (2%)	1 (2%)
Hemorrhage	7 (14%)	8 (16%)	7 (14%)	8 (16%)
Hyperplasia				
Hyperplasia, Mast Cell				
Hyperplasia	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Myelostromal Proliferation				
Erythroid Cell, Hyperplasia				
Myeloid Cell, Hyperplasia				
Lymph Node	(3)	1 (2%) (3)	1 (2%) (4)	1 (2%) (4)
Pancreatic, Hemorrhage				
Pancreatic, Infiltration Cellular, Histiocyte				
Renal, Hemorrhage				
Renal, Pigmentation				
Lymph Node, Bronchial	(37) 1 (3%)	(34)	(41)	(38)
Atrophy				
Ectasia				
Hemorrhage	4 (11%)	6 (16%)	1 (2%)	3 (8%)
Hyperplasia, Lymphoid				
Infiltration Cellular, Histiocyte				
Necrosis				
Pigmentation				
Lymph Node, Mandibular	(49) (50)	7 (21%) (50)	7 (17%) (50)	5 (13%) (49)
Ectasia				
Hemorrhage	3 (6%)	2 (4%)	1 (2%)	3 (6%)
Hyperplasia, Plasma Cell	2 (4%)	9 (18%)	4 (8%)	3 (6%)
Infiltration Cellular, Histiocyte	1 (2%)			
Pigmentation				
Lymph Node, Mesenteric	(49) 1 (2%)	(50)	(50)	(49)
Amyloid Deposition	1 (2%)			
Atrophy				
Ectasia				
Hemorrhage	8 (16%)	6 (12%)	3 (6%)	7 (14%)
Hyperplasia				

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PEIRPT03
 Date: 03/14/96
 Time: 10:45:33

	FISCHER 344 RATS FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
HEMATOPOIETIC SYSTEM - CONT					
Hyperplasia, Plasma Cell	1 (2%)				1 (2%)
Infiltration Cellular, Histiocyte	1 (2%)	(49)	1 (2%)	(50)	(49)
Inflammation	(49)	1 (2%)	13 (26%)	21 (43%)	
Lymph Node, Mediastinal		15 (31%)			
Edema	21 (43%)				
Hemorrhage	1 (2%)				
Hyperplasia, Plasma Cell	1 (2%)				
Infiltration Cellular, Histiocyte	1 (2%)	22 (45%)	22 (45%)	25 (50%)	27 (55%)
Necrosis	22 (45%)				
Pigmentation	(49)	(50)	(49)	(49)	(49)
Spleen	6 (12%)	3 (6%)	3 (6%)	3 (6%)	3 (6%)
Hematopoietic Cell Proliferation					
Bleeding					
Hyperplasia, Lymphoid		1 (2%)	1 (2%)	2 (4%)	
Necrosis		1 (2%)	1 (2%)	1 (2%)	
Pigmentation	1 (2%)		1 (2%)		1 (2%)
Red Pulp, Atrophy	1 (2%)	(47)	(47)	(47)	
Thymus	(48)				
Atrophy	1 (2%)				
Cyst			2 (4%)		
INTEGUMENTARY SYSTEM					
Mammary Gland	(48)	(50)	(49)	(49)	(49)
Galactocellosis	10 (21%)	10 (20%)	10 (20%)	11 (22%)	
Hyperplasia	13 (27%)	19 (38%)	21 (43%)	18 (37%)	
Infiltration Cellular, Lymphocyte		1 (2%)			
Skin	(50)	(50)	(50)	(50)	(49)
Cyst Epithelial Inclusion		1 (2%)	1 (2%)	1 (2%)	
Infiltration Cellular, Lymphocyte	1 (2%)				
Inflammation, Chronic	1 (2%)				
Ulcer					
Epidermis, Hyperplasia					
Subcutaneous Tissue, Fibrosis					
Subcutaneous Tissue, Inflammation		1 (2%)	1 (2%)	1 (2%)	
MUSCULOSKELETAL SYSTEM					
Bone	(50)	(50)	(50)	(50)	(49)
Fibrous Osteodystrophy	2 (4%)	1 (2%)			
Hyperostosis		5 (10%)	5 (10%)	1 (2%)	
Turbinate, Hyperostosis	2 (4%)	2 (4%)	2 (4%)	1 (2%)	

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
Study Type: CHRONIC ETHYLBENZENE
Route: RESPIRATORY EXPOSURE WHOLE BODY

FISCHER 344 RATS FEMALE

	CONTROL	75 PPM	250 PPM	750 PPM
NERVOUS SYSTEM				
Brain	(50) 1 (2%)	(50) 1 (2%)	(50) 1 (2%)	(49) 1 (2%)
Hemorrhage				
Hydrocephalus				
Necrosis				
RESPIRATORY SYSTEM				
Larynx	(45)	(43)	(44)	(45)
Infiltration Cellular, Lymphocyte				
Inflammation				
Metaplasia, Squamous	1 (2%)	3 (7%) 2 (5%)	1 (2%)	2 (4%)
Respiratory Epithelium, Hyperplasia				
Respiratory Epithelium, Metaplasia, Squamous	1 (2%)	1 (2%)	1 (2%)	2 (4%)
Lung	(50) 5 (10%)	(50) 5 (10%)	(50) 5 (10%)	(49) 5 (10%)
Congestion				
Edema				
Fibrosis				
Hemorrhage				
Infiltration Cellular, Histioocyte	2 (4%)	3 (6%)	1 (2%)	3 (6%)
Inflammation, Chronic	2 (4%)			3 (6%)
Inflammation, Chronic Active				
Inflammation, Granulomatous	1 (2%)	1 (2%)	1 (2%)	2 (4%)
Alveolar Epithelium, Hyperplasia	1 (2%)	5 (10%)	2 (4%)	5 (10%)
Nose	(50)	(50)	(50)	(49)
Angiectasis				
Congestion	1 (2%)			
Foreign Body	4 (8%)	1 (2%)		1 (2%)
Infiltration Cellular, Lymphocyte				
Inflammation				
Necrosis				
Thrombosis				
Glands, Cyst				
Glands, Hyperplasia				
Coblet Cell, Hyperplasia				
Nasolacrimal Duct, Inflammation	10 (20%)	10 (20%)	5 (10%)	1 (2%)
Nasolacrimal Duct, Metaplasia, Squamous	1 (2%)			
Respiratory Epithelium, Hyperplasia	6 (12%)	7 (14%)	5 (10%)	
Respiratory Epithelium, Metaplasia, Squamous		1 (2%)		
Respiratory Epithelium, Ulcer	2 (4%)			

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
Study Type: CHRONIC ETHYLBENZENE
Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PEIRPT03
Date: 03/14/96
Time: 10:45:33

	CONTROL	75 PPM	250 PPM	750 PPM
FISCHER 344 RATS FEMALE				
SPECIAL SENSES SYSTEM				
Eye	(1)	(3)	(1)	(1)
Lens, Cataract	1 (100%)	2 (67%)	1 (100%)	1 (100%)
Retina, Degeneration	1 (100%)		1 (100%)	
Harderian Gland			1 (100%)	
Inflammation				
URINARY SYSTEM				
Kidney	(50)	(50)	(50)	(49)
Cyst	1 (2%)	1 (2%)	1 (2%)	4 (8%)
Infarct	1 (2%)		1 (2%)	
Mineralization	8 (16%)	11 (22%)	7 (14%)	
Necrosis			1 (2%)	
Nephropathy	38 (76%)	42 (84%)	43 (86%)	46 (94%)
Pigmentation	4 (8%)	10 (20%)	8 (16%)	3 (6%)
Arteriole, Inflammation	1 (2%)			
Renal Tubule, Degeneration		1 (2%)	1 (2%)	
Renal Tubule, Hyperplasia		3 (6%)	3 (6%)	
Transitional Epithelium, Hyperplasia			2 (4%)	

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
 ETHYLBENZENE

Report: PEIRPT03
 Date: 03/14/96
 Time: 10:45:33

FISCHER 344 RATS MALE	CONTROL	75 PPM	250 PPM	750 PPM
DISPOSITION SUMMARY				
Animals Initially In Study	50	50	50	50
Early Deaths	7	16	11	22
Natural Death	28	20	26	26
Moribund Sacrifice				
Survivors	15	14	13	2
Terminal Sacrifice				
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Intestine Large, Colon	(50)	(48)	(48)	(48)
Hemorrhage	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Inflammation	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Mineralization	(48)	(49)	(48)	(48)
Intestine Large, Rectum	(46)	(44)	1 (2%)	(46)
Thrombosis	1 (2%)	2 (5%)	(39)	1 (3%)
Intestine Large, Cecum				1 (3%)
Inflammation				
Mineralization	1 (2%)	1 (2%)		
Necrosis	(48)	(48)	(50)	(50)
Ulcer	1 (2%)	(48)	(50)	(50)
Intestine Small, Duodenum				
Mineralization				
Necrosis				
Intestine Small, Jejunum	(42)	(39)	(44)	(34)
Inflammation				
Intestine Small, Ileum	(45)	(44)	(45)	(37)
Inflammation				
Liver	(50)	(50)	(50)	(49)
Angiectasis	6 (12%)	5 (10%)	2 (4%)	1 (2%)
Basophilic Focus	2 (4%)	3 (6%)	2 (4%)	4 (8%)
Clear Cell Focus		1 (2%)	3 (6%)	
Cyst	1 (2%)			
Degeneration	15 (30%)	12 (24%)	19 (38%)	30 (61%)
Eosinophilic Focus	5 (10%)	11 (22%)	4 (8%)	9 (19%)
Fibrosis				
Hemorrhage	2 (4%)			
Hepatodiaphragmatic Nodule		1 (2%)	1 (2%)	1 (2%)
Inflammation, Chronic				
Inflammation, Chronic Active		1 (2%)		1 (2%)
Mineralization				
Mixed Cell Focus	1 (2%)	2 (4%)		
Necrosis	2 (4%)	4 (8%)		8 (16%)

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PEIRPT03
 Date: 03/14/96
 Time: 10:45:33

FISCHER 344 RATS MALE

	CONTROL	75 PPM	250 PPM	750 PPM
ALIMENTARY SYSTEM - CONT				
Pigmentation	1 (2%)			
Thrombosis	8 (16%)	10 (20%)	7 (14%)	4 (8%)
Vacuolization Cytoplasmic				1 (2%)
Bile Duct, Hyperplasia		1 (2%)	1 (2%)	
Bile Duct, Inflammation, Suppurative			(3)	
Kupffer Cell, Hyperplasia	(4)	(5)	(3)	(3)
Mesentery				
Inflammation	3 (75%)	1 (20%)	2 (67%)	3 (100%)
Fat, Necrosis	(50)	4 (80%)	(50)	(50)
Pancreas				
Inflammation	24 (48%)	21 (43%)	20 (40%)	18 (36%)
Acinus, Atrophy	4 (8%)	1 (2%)	1 (2%)	
Acinus, Hyperplasia				
Artery, Degeneration				
Artery, Inflammation				
Artery, Mineralization				
Stomach, Forestomach	(50)	(50)	(50)	(50)
Hyperkeratoses	1 (2%)	1 (2%)	1 (2%)	
Hyperplasia	8 (16%)	5 (10%)	8 (16%)	8 (16%)
Inflammation	1 (2%)	1 (2%)	3 (6%)	3 (6%)
Mineralization	2 (4%)	1 (2%)	1 (2%)	5 (10%)
Ulcer	9 (18%)	9 (18%)	9 (18%)	10 (20%)
Stomach, Glandular	(50)	(49)	(50)	(50)
Degeneration, Cystic				
Inflammation	2 (4%)	1 (2%)	3 (6%)	1 (2%)
Mineralization	4 (8%)	4 (8%)	3 (6%)	18 (36%)
Necrosis	5 (10%)	2 (4%)	2 (4%)	2 (4%)
Ulcer				

CARDIOVASCULAR SYSTEM

	(50)	(50)	(50)	(50)
Blood Vessel				
Mineralization				
Aorta, Inflammation	2 (4%)	2 (4%)	1 (2%)	1 (2%)
Aorta, Mineralization	(50)	(50)	(50)	14 (28%)
Heart	26 (52%)	21 (42%)	15 (30%)	30 (60%)
Cardiomyopathy				
Inflammation				
Mineralization	2 (4%)	1 (2%)	1 (2%)	7 (14%)
Atrium, Thrombosis	5 (10%)	7 (14%)	7 (14%)	
Valve, Fibrosis	1 (2%)			

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PEIRPT03
 Date: 03/14/96
 Time: 10:45:33

	FISCHER 344 RATS MALE	CONTROL	75 PPM	250 PPM	750 PPM
ENDOCRINE SYSTEM					
Adrenal Cortex	(50)	(50)	1 (2%)	1 (2%)	(50)
Cytoplasmic Alteration	1 (2%)	2 (4%)	1 (2%)	3 (6%)	3 (6%)
Degeneration, Cystic	1 (2%)		1 (2%)	2 (4%)	1 (2%)
Hyperplasia			1 (2%)	1 (2%)	2 (4%)
Hypertrophy			1 (2%)	1 (2%)	2 (4%)
Necrosis	1 (2%)				
Pigmentation	13 (26%)	18 (36%)	16 (32%)	11 (22%)	
Vacuolization	1 (2%)				
Bilateral, Atrophy				1 (2%)	
Capsule, Inflammation					(48)
Adrenal Medulla	(50)	(50)	(49)		
Hypoplasia	10 (20%)	7 (14%)	13 (27%)		
Necrosis	2 (4%)	2 (4%)	1 (2%)		
Bilateral, Hyperplasia	(50)	(50)	(50)		
Islets, Pancreatic	2 (4%)	5 (10%)	4 (8%)		
Hyperplasia	(45)	(46)	(46)		
Parathyroid Gland					
Fibrosis	12 (27%)	6 (13%)	16 (35%)	35 (76%)	
Hyperplasia	(49)	(50)	(50)	(45)	
Pituitary Gland					
Pars Distalis, Angiectasis	5 (10%)	11 (22%)	5 (10%)	4 (9%)	
Pars Distalis, Cyst	1 (2%)	6 (12%)	5 (10%)	4 (9%)	
Pars Distalis, Degeneration					
Pars Distalis, Hemorrhage					
Pars Distalis, Hyperplasia					
Pars Distalis, Necrosis					
Pars Distalis, Pigmentation	1 (2%)		1 (2%)		
Pars Intermedia, Angiectasis	1 (2%)		2 (4%)		
Thyroid Gland	(50)	(49)	(50)	(50)	
Cyst					
C-Cell, Hyperplasia	6 (12%)	5 (10%)	5 (10%)	2 (4%)	
Follicle, Cyst	1 (2%)	1 (2%)			
GENERAL BODY SYSTEM					
None					
GENITAL SYSTEM					
Epididymis	(50)	(50)	1 (2%)	1 (2%)	(50)
Granuloma Sperm		1 (2%)	1 (2%)	1 (2%)	1 (2%)
Inflammation					
Mineralization					

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
 ETHYLBENZENE

Report: PEIRPT03
 Date: 03/14/96
 Time: 10:45:33

FISCHER 344 RATS MALE

	CONTROL	75 PPM	250 PPM	750 PPM
GENITAL SYSTEM - CONT				
Preputial Gland	(49)	(50)	(49)	(50)
Atrophy	2 (4%)	2 (4%)	1 (2%)	1 (2%)
Hyperplasia	19 (39%)	7 (14%)	8 (16%)	10 (20%)
Inflammation	(50)	(50)	(50)	(50)
Prostate	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Hyperplasia				
Infiltration Cellular, Lymphocyte	11 (22%)	29 (58%)	22 (44%)	25 (50%)
Inflammation	(49)	(49)	(50)	(50)
Seminal Vesicle				
Inflammation				
Mineralization	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Testes	(50)	(50)	(50)	(50)
Atrophy	10 (20%)	7 (14%)	10 (20%)	6 (12%)
Degeneration		1 (2%)		1 (2%)
Hemorrhage				
Mineralization	1 (2%)			
Arteriole, Inflammation	9 (18%)	7 (14%)	5 (10%)	4 (8%)
Bilateral, Atrophy			1 (2%)	
Bilateral, Necrosis	14 (28%)	19 (38%)	12 (24%)	8 (16%)
Interstitial Cell, Hyperplasia				

HEMATOPOIETIC SYSTEM

	CONTROL	75 PPM	250 PPM	750 PPM
Bone Marrow				
Atrophy	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Hemorrhage	7 (14%)	16 (33%)	9 (18%)	19 (38%)
Hyperplasia		1 (2%)		
Inflammation				
Myelofibrosis	3 (6%)			5 (10%)
Myeloid Cell, Atrophy	1 (2%)			
Lymph Node	(9)	(8)	(9)	(14)
Hemorrhage				
Lumbar, Hemorrhage		1 (13%)	1 (11%)	
Lumbar, Hyperplasia, Plasma Cell		1 (13%)	1 (11%)	
Pancreatic, Fibrosis				
Pancreatic, Pigmentation				
Renal, Ectasia				
Renal, Hemorrhage				
Renal, Hyperplasia, Lymphoid				
Renal, Hyperplasia, Plasma Cell				
Renal, Infiltration Cellular, Histiocyte				
Renal, Pigmentation				
Lymph Node, Bronchial	(44)	(34)	(39)	(28)
Ectasia				
Hemorrhage				
Infiltration Cellular, Histiocyte				
Interstitial Cell, Hyperplasia				
Mineralization				
Testes				
Uterus				

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
 Study Type: CHRONIC Date: 03/14/96
 Route: RESPIRATORY EXPOSURE WHOLE BODY Time: 10:45:33

Report: PEIRPT03
 Date: 03/14/96
 Time: 10:45:33

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

ETHYLBENZENE

FISCHER 344 RATS MALE	CONTROL	75 PPM	250 PPM	750 PPM
HEMATOPOIETIC SYSTEM - CONT				
Pigmentation	3 (7%) (47)	3 (9%) (48)	(49)	5 (10%) (50)
Lymph Node, Mandibular	1 (2%) 4 (9%)	1 (2%) 1 (2%)	1 (2%) 1 (2%)	1 (2%) 4 (8%)
Atrophy	1 (2%) 4 (9%)	1 (2%) 1 (2%)	1 (2%) 1 (2%)	1 (2%) 4 (8%)
Bleeding	Hyperplasia, Plasma Cell	1 (2%) 1 (2%)	1 (2%) 1 (2%)	1 (2%) 1 (2%)
Inflammation	Inflammation	1 (2%) (49)	(50)	(50)
Pigmentation	Lymph Node, Mesenteric	1 (2%) 1 (2%)	1 (2%) 1 (2%)	1 (2%) 1 (2%)
Atrophy	Atrophy	3 (6%) (48)	5 (10%) (48)	1 (2%) (50)
Ectasia	Ectasia	3 (6%) 1 (2%)	5 (10%) 1 (2%)	4 (8%) 1 (2%)
Hemorrhage	Hemorrhage	1 (2%) 1 (2%)	1 (2%) 1 (2%)	1 (2%) 1 (2%)
Inflammation	Inflammation	1 (2%) 1 (2%)	1 (2%) 1 (2%)	1 (2%) 1 (2%)
Lymph Node, Mediastinal	Edema	1 (2%) 12 (25%)	1 (2%) 10 (21%)	1 (2%) 10 (20%)
Edema	Hemorrhage	1 (2%) 1 (2%)	1 (2%) 1 (2%)	1 (2%) 1 (2%)
Hyperplasia, Plasma Cell	Hyperplasia, Plasma Cell	2 (4%) 2 (4%)	1 (2%) 1 (2%)	1 (2%) 1 (2%)
Infiltration Cellular, Histiocyte	Infiltration Cellular, Histiocyte	9 (19%) (50)	8 (17%) (49)	1 (2%) (50)
Inflammation	Inflammation	9 (19%) (50)	8 (17%) (49)	7 (14%) (50)
Pigmentation	Pigmentation	9 (19%) (50)	8 (17%) (49)	7 (15%) (50)
Spleen	Spleen	1 (2%) 1 (2%)	1 (2%) 1 (2%)	2 (4%) 2 (4%)
Atrophy	Atrophy	1 (2%) 1 (2%)	1 (2%) 1 (2%)	4 (8%) 4 (8%)
Congestion	Congestion	3 (6%) 3 (6%)	2 (4%) 1 (2%)	3 (6%) 4 (8%)
Depletion Cellular	Depletion Cellular	3 (6%) 3 (6%)	1 (2%) 4 (8%)	1 (2%) 1 (2%)
Fibrosis	Fibrosis	2 (4%) 2 (4%)	1 (2%) 1 (2%)	2 (4%) 2 (4%)
Hematopoietic Cell Proliferation	Hematopoietic Cell Proliferation	2 (4%) 2 (4%)	1 (2%) 1 (2%)	2 (4%) 2 (4%)
Inflammation, Chronic	Inflammation, Chronic	2 (4%) 2 (4%)	1 (2%) 1 (2%)	2 (4%) 2 (4%)
Necrosis	Necrosis	2 (4%) 2 (4%)	1 (2%) 1 (2%)	2 (4%) 2 (4%)
Pigmentation	Pigmentation	2 (4%) 2 (4%)	1 (2%) 1 (2%)	2 (4%) 2 (4%)
Red Pulp, Depletion Cellular	Red Pulp, Depletion Cellular	2 (4%) 2 (4%)	1 (2%) 1 (2%)	2 (4%) 2 (4%)
Thymus	Thymus	2 (4%) 2 (4%)	1 (2%) 1 (2%)	1 (2%) 1 (2%)
Cyst	Cyst	1 (2%) 1 (2%)	1 (2%) 1 (2%)	1 (2%) 1 (2%)
Hemorrhage	Hemorrhage	1 (2%) 1 (2%)	1 (2%) 1 (2%)	1 (2%) 1 (2%)
INTEGUMENTARY SYSTEM				
Mammary Gland	(46)	(47)	(46)	(49)
Fibrosis	11 (24%) 3 (7%)	11 (23%) 3 (6%)	1 (2%) 4 (9%)	9 (18%) 3 (6%)
Galactocele	1 (2%)	2 (4%)	1 (2%)	1 (2%)
Hyperplasia				
Inflammation				
Mineralization				
Pigmentation				
Skin	1 (2%) (50)	4 (9%) (50)	2 (4%) (50)	6 (12%) (50)
Cyst, Epithelial Inclusion	1 (2%)	2 (4%)	1 (2%)	1 (2%)
Hyperkeratosis				
Inflammation				

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT03
 Date: 03/14/96
 Time: 10:45:33

	CONTROL	75 PPM	250 PPM	750 PPM
FISCHER 344 RATS MALE				
INTEGMENTARY SYSTEM - CONT				
Inflammation, Granulomatous	1	(2%)		
Epidermis, Hyperplasia	2	(4%)		
Subcutaneous Tissue, Inflammation				
MUSCULOSKELETAL SYSTEM				
Bone	(49)	(50)	(50)	(50)
Fibrous Osteodystrophy	1	(2%)	1	(18%)
Hyperostosis	1	(2%)	2	(4%)
Turbinite, Hyperostosis				1 (2%)
NERVOUS SYSTEM				
Brain	(50)	(50)	(50)	(50)
Hemorrhage	1	(2%)	2	(2%)
Hydrocephalus			1	(2%)
Mineralization	2	(4%)	1	(6%)
Necrosis			3	(2%)
RESPIRATORY SYSTEM				
Larynx	(40)	(44)	(41)	(35)
Foreign Body				
Infiltration Cellular, Lymphocyte	1	(3%)	1	(2%)
Inflammation	1	(3%)	3	(7%)
Necrosis			1	(2%)
Respiratory Epithelium, Hyperplasia	1	(3%)	4	(9%)
Respiratory Epithelium, Metaplasia, Squamous	1	(3%)	1	(2%)
Respiratory Epithelium, Metaplasia, Squamous	(50)	(50)	(50)	(50)
Lung	1	(2%)	2	(4%)
Congestion				6 (12%)
Edema	1	(2%)		6 (12%)
Fibrosis				1 (2%)
Foreign Body				
Hemorrhage				
Infiltration Cellular, Histioocyte	2	(4%)	2	(4%)
Inflammation, Acute			1	(2%)
Inflammation, Chronic	1	(2%)		1 (2%)
Inflammation, Chronic Active	2	(4%)	3	(6%)
Inflammation, Granulomatous	1	(2%)	1	(2%)
Mineralization	1	(2%)	1	(2%)
Alveolar Epithelium, Hyperplasia	2	(4%)	2	(4%)
Artery, Mineralization				1 (2%)
Goblet Cell, Hyperplasia				1 (2%)
Interstitium, Fibrosis				1 (2%)

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PEIRPT03
 Date: 03/14/96
 Time: 10:45:33

FISCHER 344 RATS MALE

CONTROL 75 PPM 250 PPM 750 PPM

RESPIRATORY SYSTEM - CONT				
Interstitium, Inflammation	(49)	(49)	(50)	1 (2%)
Nose			1 (2%)	(50)
Angiectasis			1 (2%)	1 (2%)
Congestion	2 (4%)	2 (4%)	2 (4%)	1 (2%)
Foreign Body			1 (2%)	1 (2%)
Infiltration Cellular, Lymphocyte	8 (16%)	8 (16%)	9 (18%)	9 (18%)
Inflammation			1 (2%)	1 (2%)
Necrosis			1 (2%)	1 (2%)
Glands, Cyst			1 (2%)	1 (2%)
Goblet Cell, Hyperplasia	2 (4%)	1 (2%)	1 (2%)	1 (2%)
Nasolacrimal Duct, Inflammation	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Olfactory Epithelium, Inflammation			1 (2%)	1 (2%)
Olfactory Epithelium, Metaplasia			1 (2%)	6 (12%)
Respiratory Epithelium, Hyperplasia	9 (18%)	7 (14%)	9 (18%)	6 (12%)
Respiratory Epithelium, Inflammation	1 (2%)		3 (6%)	3 (6%)
Respiratory Epithelium, Metaplasia, Squamous	1 (2%)		1 (2%)	1 (2%)
Respiratory Epithelium, Ulcer	1 (2%)		1 (2%)	1 (2%)
Trachea	(50)	(50)	(50)	1 (2%)
Mineralization			1 (2%)	1 (2%)

SPECIAL SENSES SYSTEM

Eye	(1)	(1)		
Lens, Cataract	1 (100%)			
Retina, Degeneration			(1)	(1)
Zymbal's Gland	(1)			1 (100%)
Cyst				1 (100%)
Hyperplasia				

URINARY SYSTEM

Kidney	(50)	(50)	(50)	(50)
Cyst		4 (8%)	1 (2%)	10 (20%)
Hemorrhage		1 (2%)		1 (2%)
Infarct	2 (4%)			
Inflammation		1 (2%)	1 (2%)	9 (18%)
Mineralization	1 (2%)		1 (2%)	1 (2%)
Necrosis	1 (2%)		1 (2%)	48 (96%)
Nephropathy	47 (94%)	43 (86%)	47 (94%)	48 (96%)
Pigmentation	9 (18%)	6 (12%)	9 (18%)	2 (4%)
Renal Tubule, Hyperplasia	2 (4%)	2 (4%)	4 (8%)	12 (24%)
Transitional Epithelium, Hyperplasia	12 (24%)	14 (28%)	15 (30%)	34 (68%)
Urinary Bladder	(49)	(49)	(50)	(49)
Hemorrhage	1 (2%)	2 (4%)	1 (2%)	1 (2%)
Inflammation	1 (2%)	3 (6%)	1 (2%)	

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Study Type: CHRONIC ETHYLBENZENE
Route: RESPIRATORY EXPOSURE WHOLE BODY

FISCHER 344 RATS MALE

Report: PEIRPT03
Date: 03/14/96
Time: 10:45:33

	CONTROL	75 PPM	250 PPM	750 PPM
URINARY SYSTEM - CONT				

Necrosis 1 (2%)
Transitional Epithelium, Hyperplasia 2 (4%)

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Report: PEIRPT05
Study Type: CHRONIC Date: 03/14/96
Route: RESPIRATORY EXPOSURE WHOLE BODY Time: 11:28:43

CORE STUDY

Facility: I. I. T. Research Institute

Chemical CAS #: 100-41-4

Lock Date: 10/02/92

Cage Range: All

Reasons For Removal: All

Removal Date Range: All

Treatment Groups: Include All

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
 Date: 03/14/96
 Time: 11:28:43

	CONTROL	75 PPM	250 PPM	750 PPM
FISCHER 344 RATS FEMALE				
DISPOSITION SUMMARY				
Animals Initially in Study	50	50	50	50
Early Deaths	7	14	8	6
Moribund Sacrifice	12	5	8	8
Natural Death				
Survivors	30	31	34	35
Terminal Sacrifice	1			
Natural Death				1
Missing				
Animals Examined Microscopically	50	50	50	49
ALIMENTARY SYSTEM				
Intestine Large, Colon	(47)	(49)	(48)	(49)
Intestine Large, Rectum	(49)	(50)	(47)	(49)
Polyp Adenomatous	(44)	(50)	(47)	(49)
Intestine Large, Cecum	(47)	(48)	(47)	(48)
Intestine Small, Duodenum	(47)	(48)	(47)	(48)
Intestine Small, Jejunum	(41)	(49)	(47)	(45)
Intestine Small, Ileum	(41)	(48)	(47)	(46)
Liver	(50)	(50)	(50)	(49)
Histiocytic Sarcoma	1 (2%)			
Mesentery	(7)	(4)	(6)	(7)
Oral Mucosa				
Pharyngeal, Squamous Cell Papilloma	(49)	(50)	(50)	(50)
Pancreas	1 (2%)			
Histiocytic Sarcoma	(50)	(50)	(50)	(50)
Salivary Glands	(49)	(50)	(50)	(50)
Stomach, Forestomach	(49)	(49)	(49)	(49)
Stomach, Glandular			(1)	(1)
Tongue			1 (100%)	1 (100%)
Schwannoma Malignant				
Squamous Cell Papilloma				
CARDIOVASCULAR SYSTEM				
Heart	(50)	(50)	(50)	(49)

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
 Date: 03/14/96
 Time: 11:28:43

	FISCHER 344 RATS FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
ENDOCRINE SYSTEM					
Adrenal Cortex	(50)	(50)	1 (2%)	1 (2%)	(49)
Adenoma			1 (2%)	1 (2%)	
Carcinoma			2 (4%)	2 (4%)	
Adrenal Medulla	(50)	(50)	1 (2%)	2 (4%)	(49)
Pheochromocytoma Malignant					
Pheochromocytoma Benign	2 (4%)				
Bilateral, Pheochromocytoma Benign					
Islets, Pancreatic	(50)	(50)	2 (4%)	1 (2%)	(49)
Adenoma			1 (2%)	1 (2%)	
Pituitary Gland	(49)	(49)			(49)
Pars Distalis, Adenoma	27 (55%)	17 (35%)		24 (48%)	24 (49%)
Pars Distalis, Adenoma, Multiple	3 (6%)	6 (12%)	1 (2%)	3 (6%)	
Pars Distalis, Carcinoma		1 (2%)			
Thyroid Gland	(48)	(50)			(49)
Bilateral, C-Cell, Adenoma		1 (2%)	2 (4%)	3 (6%)	
C-Cell, Adenoma	2 (4%)	3 (6%)		1 (2%)	
C-Cell, Carcinoma					
GENERAL BODY SYSTEM					
None					
GENITAL SYSTEM					
Clitoral Gland	(47)	(49)		(48)	(47)
Adenoma	2 (4%)				
Carcinoma	1 (2%)				
Ovary	(50)	(50)		1 (2%)	
Histiocytic Sarcoma				(50)	(49)
Uterus	(50)	(50)		(50)	1 (2%)
Polyp Stromal	2 (4%)	3 (6%)	4 (8%)	3 (6%)	
Bilateral, Polyp Stromal			1 (2%)		
Endometrium, Sarcoma Stromal					
HEMATOPOIETIC SYSTEM					
Bone Marrow	(49)	(50)		(50)	(49)
Lymph Node	(3)	(3)		(4)	(4)
Lumbar, Histiocytic Sarcoma	1 (33%)				
Lymph Node, Bronchial	(37)	(34)		(41)	(38)
Lymph Node, Mandibular				(50)	(49)
Lymph Node, Mesenteric	(49)	(50)		(50)	(49)
Lymph Node, Mediastinal	(49)	(49)		(50)	(49)

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)

Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

	CONTROL	75 PPM	250 PPM	750 PPM
FISCHER 344 RATS FEMALE				
HEMATOPOIETIC SYSTEM - cont				
Rhabdomyosarcoma, Metastatic, Uncertain Primary Site				
Spleen	(49)	(50)	(49)	(49)
Thymus	(48)	(47)	(47)	(47)
Rhabdomyosarcoma, Metastatic, Uncertain Primary Site				
1 (2%)				
INTEGUMENTARY SYSTEM				
Mammary Gland	(48)	(50)	(49)	(49)
1 (2%)	2 (4%)	1 (2%)	2 (4%)	1 (2%)
Adenoma				
Carcinoma				
Carcinoma, Multiple	2 (4%)	1 (2%)	2 (4%)	1 (2%)
Fibroadenoma				
Fibroadenoma, Multiple	13 (27%)	18 (36%)	16 (37%)	15 (31%)
Skin				
Squamous Cell Carcinoma	6 (13%)	1 (2%)	3 (6%)	6 (12%)
Squamous Cell Papilloma				
Sebaceous Gland, Carcinoma	(50)	(50)	(50)	(49)
Subcutaneous Tissue, Fibroma				
Subcutaneous Tissue, Fibrosarcoma				
Subcutaneous Tissue, Lipoma	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Subcutaneous Tissue, Sarcoma				
MUSCULOSKELETAL SYSTEM				
Skeletal Muscle				
1 (1)				
NERVOUS SYSTEM				
Brain				
Astrocytoma Malignant	(50)	(50)	(50)	(49)
Carcinoma, Metastatic, Pituitary Gland	1 (2%)	1 (2%)	1 (2%)	
RESPIRATORY SYSTEM				
Larynx				
Lung				
Alveolar/Bronchiolar Adenoma	(45)	(43)	(44)	(45)
Alveolar/Bronchiolar Adenoma, Multiple	(50)	(50)	(50)	(49)
Carcinoma, Metastatic, Mammary Gland	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Histiocytic Sarcoma				
Sarcoma, Metastatic, Uncertain Primary Site	1 (2%)		1 (2%)	

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)

Report: PEIRPT05
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

		CONTROL	75 PPM	250 PPM	750 PPM
RESPIRATORY SYSTEM - cont					
Mediastinum, Sarcoma, Metastatic, Uncertain Primary Site		(50)	1 (2%) (50)	(50)	(49) (49)
Nose		(50)	1 (2%) (50)	(50)	(49) (49)
Glands, Adenoma					
Trachea					
SPECIAL SENSES SYSTEM					
Ear		(3)			
External Ear, Sarcoma		1 (33%)			
Zymbal's Gland		(1)			
Adenoma		1 (100%)			
Carcinoma			1 (100%)		
URINARY SYSTEM					
Kidney		(50)			
Renal Tubule, Adenoma		(49)	(50)	(50)	(49) (48)
Urinary Bladder					
SYSTEMIC LESIONS					
Multiple Organs		* (50)			
Histiocytic Sarcoma		2 (4%)			
Leukemia Granulocytic			1 (2%)		
Leukemia Mononuclear		13 (26%)	18 (36%)	16 (32%)	11 (22%)
Lymphoma Malignant		1 (2%)	1 (2%)		

* Number of animals with any tissue examined microscopically

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
Date: 03/14/96
Time: 11:28:43

FISCHER 344 RATS FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
TUMOR SUMMARY				
Total Animals with Primary Neoplasms (b)	42	45	43	46
Total Primary Neoplasms:	84	84	84	74
Total Animals with Benign Neoplasms	37	39	37	39
Total Benign Neoplasms	62	57	60	58
Total Animals w.th Malignant Neoplasms	20	24	21	14
Total Malignant Neoplasms	22	27	24	16
Total Animals with Metastatic Neoplasms	2	3	3	3
Total Metastatic Neoplasm				
Total Animals with Malignant Neoplasms	1	1	1	1
Uncertain Primary Site				
Total Animals with Neoplasms Uncertain-Benign or Malignant				
Total Uncertain Neoplasms				

a Number of animals examined microscopically at site and number of animals with lesion

b Primary tumors: all tumors except metastatic tumors

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PELIRPT05
 Date: 03/14/96
 Time: 11:26:43

FISCHER 344 RATS MALE	CONTROL	75 PPM	250 PPM	750 PPM
DISPOSITION SUMMARY				
Animals Initially in Study				
Early Deaths	50	50	50	50
Natural Death	7	16	11	22
Moribund Sacrifice	28	20	26	26
Survivors	15	14	13	2
Terminal Sacrifice				
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Esophagus	(50)	(50)	(50)	(50)
Intestine Large, Colon	(50)	(48)	(48)	(48)
Sarcoma	1 (2%)	(49)	(48)	(48)
Intestine Large, Rectum	(48)	(49)	(48)	(48)
Intestine Large, Cecum	(46)	(44)	(46)	(39)
Intestine Large, Duodenum	(48)	(48)	(50)	(50)
Intestine Small, Duodenum	(42)	(39)	(44)	(34)
Intestine Small, Jejunum	(45)	(44)	(45)	(37)
Intestine Small, Ileum	(50)	(50)	(50)	(49)
Liver	3 (6%)	1 (2%)	1 (2%)	1 (2%)
Hepatocellular Adenoma				
Histiocytic Sarcoma				
Osteosarcoma, Metastatic, Spleen	1 (2%)	(5)	(3)	(3)
Mesentery	(4)		1 (33%)	(3)
Lipoma	1 (25%)			
Sarcoma	(2)			
Oral Mucosa	2 (100%)		(1)	(1)
Pharyngeal, Squamous Cell Papilloma	(50)	(49)	1 (100%)	1 (100%)
Pancreas		1 (2%)	(50)	(50)
Duct, Carcinoma		(49)	(50)	(50)
Salivary Glands	(50)	(49)	(50)	(50)
Stomach, Forestomach	(50)	(50)	(50)	(50)
Stomach, Glandular	(50)	(49)	(50)	(50)
Tongue	(1)	1 (100%)		
Squamous Cell Papilloma				
CARDIOVASCULAR SYSTEM				
Heart	(50)	(50)	(50)	(50)

NTP Experiment - Test: 05210-03 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
 Date: 03/14/96
 Time: 11:28:43

FISCHER 344 RATS MALE

CONTROL 75 PPM 250 PPM 750 PPM

ENDOCRINE SYSTEM

	CONTROL	75 PPM	250 PPM	750 PPM
Adrenal Cortex	(50)	(50)	(50)	(50)
Osteosarcoma, Metastatic, Spleen	1 (2%)	(50)	(49)	(48)
Adrenal Medulla	(50)	(50)	(50)	(50)
Osteosarcoma, Metastatic, Spleen	1 (2%)	(50)	(50)	(50)
Pheochromocytoma Malignant	6 (12%)	1 (2%)	6 (12%)	2 (4%)
Pheochromocytoma Benign	6 (12%)	10 (20%)	6 (12%)	9 (19%)
Bilateral, Pheochromocytoma Benign	7 (14%)	3 (6%)	3 (6%)	3 (6%)
Islets, Pancreatic	(50)	(50)	(50)	(50)
Adenoma	3 (6%)	4 (8%)	4 (8%)	4 (8%)
Carcinoma	2 (4%)	1 (2%)	1 (2%)	1 (2%)
Parathyroid Gland	(45)	(46)	(46)	(46)
Adenoma	(49)	1 (2%)	1 (2%)	1 (2%)
Pituitary Gland	(50)	(50)	(50)	(45)
Pars Distalis, Adenoma	23 (47%)	18 (36%)	18 (36%)	18 (40%)
Pars Distalis, Adenoma, Multiple	2 (4%)	1 (2%)	1 (2%)	1 (2%)
Thyroid Gland	(50)	(49)	(50)	(50)
Bilateral, C-Cell, Adenoma	2 (4%)	6 (12%)	3 (6%)	2 (4%)
C-Cell, Adenoma	1 (2%)	6 (12%)	3 (6%)	2 (4%)
C-Cell, Carcinoma	2 (4%)	1 (2%)	1 (2%)	1 (2%)
Follicular Cell, Carcinoma	1 (2%)	1 (2%)	1 (2%)	1 (2%)

GENERAL BODY SYSTEM

Peritoneum (1)

GENITAL SYSTEM

	CONTROL	75 PPM	250 PPM	750 PPM
Epididymis	(50)	(50)	(50)	(50)
Preputial Gland	(49)	(50)	(49)	(50)
Adenoma	3 (6%)	1 (2%)	1 (2%)	2 (4%)
Bilateral, Adenoma	(50)	(50)	(50)	(50)
Prostate	(49)	(49)	(50)	(50)
Seminal Vesicle	(50)	(50)	(50)	(50)
Testes	27 (54%)	23 (46%)	32 (64%)	40 (80%)
Bilateral, Interstitial Cell, Adenoma	9 (18%)	10 (20%)	8 (16%)	4 (8%)
Interstitial Cell, Adenoma				

HEMATOPOIETIC SYSTEM

	CONTROL	75 PPM	250 PPM	750 PPM
Bone Marrow	(49)	(49)	(50)	(50)
Histiocytic Sarcoma		1 (2%)		
Lymph Node	(9)	8	(9)	(14)
Lymph Node, Bronchial	(44)	(34)	(39)	(28)

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
 Date: 03/14/96
 Time: 11:28:43

FISCHER 344 RATS MALE	CONTROL	75 PPM	250 PPM	750 PPM
HEMATOPOIETIC SYSTEM - cont				
Histiocytic Sarcoma	(47)	1 (3%)	(49)	(50)
Lymph Node, Mandibular	(49)	(48)	(50)	(50)
Lymph Node, Mesenteric	(50)	1 (2%)		
Histiocytic Sarcoma	(48)	(48)	(50)	(47)
Lymph Node, Mediastinal	(50)	1 (2%)	(50)	(50)
Histiocytic Sarcoma	(49)	(49)	(50)	(50)
Spleen		1 (2%)		
Histiocytic Sarcoma	1 (2%)	(44)	(46)	(44)
Osteosarcoma	(46)	1 (2%)	1 (2%)	
Thymus				
Histiocytic Sarcoma				
Thymoma Benign				
INTEGUMENTARY SYSTEM				
Mammary Gland	(46)	(47)	(46)	(49)
Adenoma	2 (4%)	2 (4%)	1 (2%)	2 (4%)
Fibroadenoma				
Fibroadenoma, Multiple				
Fibroma	(50)	2 (4%)	(50)	(50)
Skin				
Basal Cell Adenoma	3 (6%)	2 (4%)	2 (4%)	1 (2%)
Basal Cell Carcinoma	2 (4%)	1 (2%)	1 (2%)	2 (4%)
Keratoacanthoma				
Squamous Cell Papilloma				
Pinna, Schwannoma Benign				
Pinna, Schwannoma Malignant				
Sebaceous Gland, Adenoma	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Subcutaneous Tissue, Fibroma				
Subcutaneous Tissue, Fibrosarcoma				
Subcutaneous Tissue, Lipoma				
Subcutaneous Tissue, Myxoma				
Subcutaneous Tissue, Sarcoma				
2 (4%)				
MUSCULOSKELETAL SYSTEM				
Bone	(49)	(50)	(50)	(50)
Histiocytic Sarcoma		1 (2%)		
Turbinate, Chondroma	(1)	(1)	1 (2%)	(1)
Skeletal Muscle				
Histiocytic Sarcoma				
Osteosarcoma, Metastatic, Spleen	1 (100%)			1 (100%)
Sarcoma				

NTP Experiment-Test : 05210-03 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED)
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

FISCHER 344 RATS MALE	CONTROL	75 PPM	250 PPM	750 PPM
-----------------------	---------	--------	---------	---------

NERVOUS SYSTEM	(50)	(50)	(50)	(50)
Brain Glioma Malignant				
RESPIRATORY SYSTEM				
Larynx	(40)	(44)	(41)	(35)
Lung	2 (4%)	1 (2%)	1 (50)	1 (50)
Alveolar/Bronchiolar Adenoma	1 (2%)			
Alveolar/Bronchiolar Carcinoma	2 (4%)	1 (2%)		
Carcinoma, Metastatic, Thyroid Gland	2 (4%)			
Histiocytic Sarcoma		1 (2%)		
Osteosarcoma, Metastatic, Spleen	1 (2%)			
Mediastinum, Osteosarcoma, Metastatic, Spleen	1 (2%)			
Nose	(49)	(49)	(50)	(50)
Trachea	(50)		1 (2%)	
Leiomyosarcoma				
SPECIAL SENSES SYSTEM				
Harderian Gland		(1)	(1)	(1)
Carcinoma		1 (100%)	1 (100%)	1 (100%)
Zymbal's Gland				
Carcinoma				
URINARY SYSTEM				
Kidney	(50)	(50)	(50)	(50)
Histiocytic Sarcoma	1 (2%)	1 (2%)		
Lipoma				
Renal Tubule, Adenoma		3 (6%)	2 (4%)	4 (8%)
Renal Tubule, Carcinoma			1 (2%)	3 (6%)
Urinary Bladder	(49)	(49)	(50)	(49)
Transitional Epithelium, Papilloma		1 (2%)		

SYSTEMIC LESIONS

Multiple Organs	* (50)	* (50)	* (50)	* (50)
Histiocytic Sarcoma		1 (2%)		
Leukemia Mononuclear	27 (54%)	26 (52%)	32 (64%)	9 (18%)
Mesothelioma Malignant		2 (4%)	1 (2%)	

* Number of animals with any tissue examined microscopically

NTP Experiment-Test: 05210-03 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
Date: 03/14/96
Time: 11:28:43

	CONTROL	75 PPM	250 PPM	750 PPM
FISCHER 344 RATS MALE				
<hr/>				
TUMOR SUMMARY				
Total Animals with Primary Neoplasms (b)	49	45	50	50
Total Primary Neoplasms	134	131	134	111
Total Animals with Benign Neoplasms	48	44	48	48
Total Benign Neoplasms	97	95	94	93
Total Animals with Malignant Neoplasms	33	32	37	17
Total Malignant Neoplasms	37	36	40	18
Total Animals with Metastatic Neoplasms	3			
Total Metastatic Neoplasm	8			
Total Animals with Malignant Neoplasms Uncertain Primary Site				
Total Animals with Neoplasms Uncertain- Benign or Malignant				
Total Uncertain Neoplasms				

a Number of animals examined microscopically at site and number of animals with lesion

b Primary tumors: all tumors except metastatic tumors

NTP LAB: I. I. T. Research Inst
EXPERIMENT: 05210 TEST: 03
TEST TYPE: CHRONIC
CONT: N01-ES-75193
PATHOLOGIST: BRENNERKE, LUK

STATISTICAL ANALYSIS OF PRIMARY TUMORS
ETHYLBENZENE

CAGES FROM 0000 TO LAST CAGE
ROUTE: RESPIRATORY EXPOSURE WHOLE BODY

REPORT: PEIRPT08
DATE: 03/14/96
TIME: 12:05:20
PAGE: 1
NTP C#: 56393
CAS: 100-41-4

RECEIVED
OPPT CBIC
96 JUL -3 AM 11:14

CORE STUDY

REASONS FOR REMOVAL:
ALL

REMOVAL DATE RANGE:
ALL
TREATMENT GROUPS:
INCLUDE ALL

NTP
LAB: I. I. T. Research Inst
EXPERIMENT: 05210 TEST: 03
TEST TYPE: CHRONIC
CONT: N01-ES-75193
PATHOLOGIST: BRENNERCKE, LUK

STATISTICAL ANALYSIS OF PRIMARY TUMORS

ETHYLBENZENE

CAGES FROM 0000 TO LAST CAGE
ROUTE: RESPIRATORY EXPOSURE WHOLE BODY

REPORT: PEIRPT08
DATE: 03/14/96
TIME: 12:05:20
NTP C#: 56393
CAS: 100-41-4

FOR ALL DOSES THE TUMOR RATES IN THE FOLLOWING TISSUES/ORGANS, RATES ARE BASED ON NUMBER OF ANIMALS NECROPSIED.

RATS (FISCHER344)

FOR ALL DOSES THE TUMOR RATES IN THE FOLLOWING TISSUES/ORGANS, RATES ARE BASED ON NUMBER OF TISSUES EXAMINED.

Adrenal Cortex
Adrenal Medulla
Bone Marrow
Brain
Clitoral Gland
Clitoral/Preputial Gland
Epididymis
Heart
Islets, Pancreatic
Kidney
Larynx
Liver
Lung
Nose
Ovary
Pancreas
Parathyroid Gland
Pituitary Gland
Preputial Gland
Prostate
Salivary Glands
Spleen
Testes
Thymus
Thyroid Gland
Urinary Bladder

NTP
LAB: I. I. T. Research Inst
EXPERIMENT: 05210 TEST: 03
TEST TYPE: CHRONIC
CONT: N01-ES-75193
PATHOLOGIST: BRENNERCKE, LUK

STATISTICAL ANALYSIS OF PRIMARY TUMORS
ETHYLBENZENE

CAGES FROM 0000 TO LAST CAGE
ROUTE: RESPIRATORY EXPOSURE WHOLE BODY

REPORT: PEIRPT08
DATE: 03/14/96
TIME: 12:05:20
NTP CM: 56393
CAS: 100-41-4

SUMMARY OF STATISTICALLY SIGNIFICANT ($P \leq .05$) RESULTS
IN THE ANALYSIS OF THE STUDY OF ETHYLBENZENE

MALE RATS	
ORGAN	MORPHOLOGY
Adrenal Medulla	Pheochromocytoma Benign
	Pheochromocytoma: Benign, Complex, Malignant, NOS
Clitoral/Preputial Gland	Adenoma
	Carcinoma or Adenoma
Islets, Pancreatic	Adenoma
Kidney: Renal Tubule	Carcinoma
	Carcinoma or Adenoma
Pituitary Gland: Pars Distalis or Unspecified Site	Adenoma
	Carcinoma or Adenoma
Testes	Adenoma
All Organs	Leukemia: Lymphocytic, Monocytic, Mononuclear, or Undifferentiated
	Benign Tumors
	Malignant Tumors
	Malignant and Benign Tumors
FEMALE RATS	
ORGAN	MORPHOLOGY
All Organs	Malignant Tumors

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES				
	CONTROL	75 PPM PPM	250 PPM PPM	750 PPM PPM	CONTROL	75 PPM PPM	250 PPM PPM	750 PPM PPM
Adrenal Medulla Pheochromocytoma Benign								
TUMOR RATES								
OVERALL (a)	13/50 (26%)	13/50 (26%)	9/49 (18%)	12/48 (25%)	2/50 (4%)	2/50 (4%)	0/50 (0%)	0/49 (0%)
ADJUSTED (b)	48.8%	62.0%	42.6%	100.0%	6.5%	5.6%	0.0%	0.0%
TERMINAL (d)	4/15 (27%)	7/14 (50%)	4/13 (31%)	2/2 (100%)	2/31 (6%)	0/31 (0%)	0/34 (0%)	0/35 (0%)
FIRST INCIDENCE (DAYS)	584	584	590	546	734 (T)	719	---	---
STATISTICAL TESTS (f)								
LIFE TABLE	P=0.003 **	P=0.545	P=0.27DN	P=0.014 *	P=0.112N	P=0.677N	P=0.210N	P=0.212N
INCIDENTAL TUMOR	P=0.296	P=0.514	P=0.233N	P=0.447	P=0.116N	P=0.658	P=0.218N	P=0.212N
LOGISTIC REGRESSION	P=0.211	P=0.552	P=0.233N	P=0.307	P=0.108N	P=0.686N	P=0.218N	P=0.212N
COCHRAN-ARMITAGE	P=0.516N				P=0.124N			
FISHER EXACT		P=0.590N	P=0.251N	P=0.547N		P=0.691N	P=0.247N	P=0.253N
Adrenal Medulla Pheochromocytoma Malignant								
TUMOR RATES								
OVERALL (a)	0/50 (0%)	1/50 (2%)	0/49 (0%)	2/48 (4%)	0/50 (0%)	1/50 (2%)	2/50 (4%)	0/49 (0%)
ADJUSTED (b)	0.0%	7.1%	0.0%	5.2%	0.0%	3.2%	5.0%	0.0%
TERMINAL (d)	0/15 (0%)	1/14 (7%)	0/13 (0%)	0/2 (0%)	0/31 (0%)	1/31 (3%)	0/34 (0%)	0/35 (0%)
FIRST INCIDENCE (DAYS)	---	734 (T)	---	507	---	734 (T)	659	---
STATISTICAL TESTS (f)								
LIFE TABLE	P=0.060	P=0.486	(e)	P=0.216	P=0.480N	P=0.500	P=0.254	(e)
INCIDENTAL TUMOR	P=0.144	P=0.486	(e)	P=0.361	P=0.506N	P=0.500	P=0.213	(e)
LOGISTIC REGRESSION	P=0.161	P=0.486	(e)	P=0.290	P=0.514N	P=0.500	P=0.234	(e)
COCHRAN-ARMITAGE	P=0.143				P=0.521N			
FISHER EXACT		P=0.500	(e)	P=0.237		P=0.500	P=0.247	(e)

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES		
	CONTROL	75 PPM PPM	250 PPM	750 PPM	CONTROL	75 PPM PPM
Adrenal Medulla Pheochromocytoma: Benign, Complex, Malignant, NOS						
TUMOR RATES						
OVERALL (a)	13/50 (26%)	13/50 (26%)	9/49 (18%)	14/48 (29%)	2/50 (4%)	3/50 (6%)
ADJUSTED (b)	48.8%	62.0%	42.6%	100.0%	6.5%	8.6%
TERMINAL (d)	4/15 (27%)	7/14 (50%)	4/13 (31%)	2/2 (100%)	2/31 (6%)	1/31 (3%)
FIRST INCIDENCE (DAYS)	584	584	590	507	734 (T)	719
STATISTICAL TESTS (F)						
LIFE TABLE	P<0.001 **	P=0.545	P=0.279N	P=0.005 **	P=0.101N	P=0.516
INCIDENTAL TUMOR	P=0.152	P=0.514	P=0.233N	P=0.312	P=0.108N	P=0.464
LOGISTIC REGRESSION	P=0.106	P=0.552	P=0.233N	P=0.214	P=0.105N	P=0.514
COCHRAN-ARMITAGE	P=0.379	P=0.590N	P=0.251N	P=0.450	P=0.120N	P=0.500
FISHER EXACT						
Clitoral/Preputial Gland Adenoma						
TUMOR RATES						
OVERALL (a)	3/49 (6%)	1/50 (2%)	1/49 (2%)	4/50 (8%)	2/47 (4%)	0/49 (0%)
ADJUSTED (b)	12.5%	2.3%	7.7%	42.7%	6.9%	0.0%
TERMINAL (d)	1/14 (7%)	0/14 (0%)	1/13 (8%)	0/2 (0%)	2/29 (7%)	0/30 (0%)
FIRST INCIDENCE (DAYS)	574	560	734 (T)	500	734 (T)	719
STATISTICAL TESTS (F)						
LIFE TABLE *	P=0.048 *	P=0.318N	P=0.314N	P=0.172	P=0.221N	P=0.230N
INCIDENTAL TUMOR	P=0.260	P=0.300N	P=0.328N	P=0.566	P=0.221N	P=0.230N
LOGISTIC REGRESSION	P=0.228	P=0.291N	P=0.302N	P=0.502	P=0.221N	P=0.230N
COCHRAN-ARMITAGE	P=0.227	P=0.301N	P=0.309N	P=0.511	P=0.244N	P=0.244N
FISHER EXACT						

DOSE	MALES			FEMALES			
	CONTROL	75 PPM	250 PPM	750 PPM	75 PPM	250 PPM	750 PPM
Clinical/Preputial Gland Carcinoma or Adenoma							
Clitoral/Preputial Gland Carcinoma or Adenoma							
TUMOR RATES							
OVERALL (a)	3/49 (6%)	1/50 (2%)	1/49 (2%)	4/50 (8%)	3/47 (6%)	0/49 (0%)	0/47 (0%)
ADJUSTED (b)	12.5%	2.3%	7.7%	42.7%	10.3%	0.0%	0.0%
TERMINAL (d)	1/14 (7%)	0/14 (0%)	1/13 (8%)	0/2 (0%)	3/29 (10%)	0/30 (0%)	0/34 (0%)
FIRST INCIDENCE (DAYS)	57.4	560	734 (T)	500	734 (T)	---	734 (T)
STATISTICAL TESTS (f)							
LIFE TABLE	P=0.048 *	P=0.316N	P=0.314N	P=0.172	P=0.137N	P=0.114N	P=0.094N
INCIDENTAL TUMOR	P=0.260	P=0.300N	P=0.328N	P=0.566	P=0.137N	P=0.114N	P=0.094N
LOGISTIC REGRESSION	P=0.228	P=0.291N	P=0.302N	P=0.502	P=0.137N	P=0.114N	P=0.094N
COCHRAN-ARMITAGE	P=0.227				P=0.162N		
FISHER EXACT		P=0.301N	P=0.309N	P=0.511		P=0.113N	P=0.301N
Islets, Pancreatic Adenoma							
TUMOR RATES							
OVERALL (a)	3/50 (6%)	4/50 (8%)	4/50 (8%)	4/50 (8%)	1/50 (2%)	0/50 (0%)	1/49 (2%)
ADJUSTED (b)	16.0%	17.5%	22.5%	60.5%	3.2%	0.0%	2.3%
TERMINAL (d)	1/15 (7%)	1/14 (7%)	2/13 (15%)	1/2 (50%)	1/31 (3%)	0/31 (0%)	0/35 (0%)
FIRST INCIDENCE (DAYS)	692	560	671	645	734 (T)	---	699
STATISTICAL TESTS (f)							
LIFE TABLE	P=0.033 *	P=0.492	P=0.477	P=0.043 *	P=0.580	P=0.500N	P=0.744N
INCIDENTAL TUMOR	P=0.323	P=0.472	P=0.545	P=0.298	P=0.552	P=0.500N	P=0.750N
LOGISTIC REGRESSION	P=0.220	P=0.483	P=0.509	P=0.163	P=0.546	P=0.500N	P=0.763N
COCHRAN-ARMITAGE	P=0.493				P=0.539		P=0.753N
FISHER EXACT		P=0.500	P=0.500	P=0.500		P=0.500N	P=0.747

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES		
	CONTROL	75 PPM	250 PPM	750 PPM	250 PPM	750 PPM
Islets, Pancreatic Carcinoma						
TUMOR RATES						
OVERALL (a)	2/50 (4%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/49 (0%)
ADJUSTED (b)	8/68 (0%)	7/14 (7%)	0/13 (0%)	0/2 (0%)	0/0% 0/31 (0%)	0/0% 0/35 (0%)
TERMINAL (d)	0/15 (0%)	1/14 (7%)	0/13 (0%)	---	---	---
FIRST INCIDENCE (DAYS)	590	734 (T)	---	---	---	---
STATISTICAL TESTS (F)						
LIFE TABLE	P=0.308N	P=0.504N	P=0.244N	P=0.449N	(e)	(e)
INCIDENTAL TUMOR	P=0.169N	P=0.512N	P=0.242N	P=0.187N	(e)	(e)
LOGISTIC REGRESSION	P=0.201N	P=0.510N	P=0.236N	P=0.267N	(e)	(e)
COCHRAN-ARMITAGE	P=0.169N	P=0.500N	P=0.247N	P=0.247N	(e)	(e)
FISHER EXACT						
Islets, Pancreatic Carcinoma or Adenoma						
TUMOR RATES						
OVERALL (a)	5/50 (10%)	5/50 (10%)	4/50 (8%)	4/50 (8%)	1/50 (2%)	0/50 (0%)
ADJUSTED (b)	23.3%	23.9%	22.5%	60.5%	3.2% 1/31 (3%)	0/0% 0/34 (0%)
TERMINAL (d)	1/15 (7%)	2/14 (14%)	2/13 (15%)	1/2 (50%)	734 (T)	0/31 (0%) 699
FIRST INCIDENCE (DAYS)	590	560	671	645	---	655
STATISTICAL TESTS (F)						
LIFE TABLE	P=0.116	P=0.617	P=0.523N	P=0.152	P=0.580	P=0.744N
INCIDENTAL TUMOR	P=0.581	P=0.600	P=0.462N	P=0.643N	P=0.552	P=0.760
LOGISTIC REGRESSION	P=0.464	P=0.612	P=0.492N	P=0.462	P=0.546	P=0.750N
COCHRAN-ARMITAGE	P=0.429N	P=0.630N	P=0.500N	P=0.500N	P=0.539	P=0.753N
FISHER EXACT						

EXPERIMENT: 05210 TEST: 03
SUBSTANCES OF SPONTANEOUS TUMORS IN RATS (FISCHER 344) == ETHYL BENZENE

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES		
	CONTROL	75 PPM	250 PPM	750 PPM	250 PPM	750 PPM
Kidney: Renal Tubule Adenoma						
TUMOR RATES						
OVERALL (a)	0/50 (0%)	3/50 (6%)	2/50 (4%)	4/50 (8%)	0/50 (0%)	0/50 (0%)
ADJUSTED (b)	0/0% 0/15 (0%)	11/2% 0/14 (0%)	11/0% 1/13 (8%)	56.9% 1/2 (50%)	0/0% 0/31 (0%)	0/0% 0/34 (0%)
TERMINAL (d)	---	617	671	587	---	734 (T)
FIRST INCIDENCE (DAYS)						
STATISTICAL TESTS (F)						
LIFE TABLE	P=0.006 **	P=0.120	P=0.236	P=0.008 **	P=0.232	P=0.524
INCIDENTAL TUMOR	P=0.095	P=0.126	P=0.251	P=0.033 *	P=0.232	P=0.524
LOGISTIC REGRESSION	P=0.064	P=0.119	P=0.240	P=0.037 *	P=0.232	P=0.524
COCHRAN-ARMITAGE	P=0.109			P=0.210		
FISHER EXACT		P=0.121	P=0.247	P=0.059	(e)	P=0.495
Kidney: Renal Tubule Carcinoma						
TUMOR RATES						
OVERALL (a)	0/50 (0%)	0/50 (0%)	1/50 (2%)	3/50 (6%)	0/50 (0%)	0/50 (0%)
ADJUSTED (b)	0/0% 0/15 (0%)	0/0% 0/14 (0%)	7/7% 1/13 (8%)	12.5% 0/2 (0%)	0/0% 0/31 (0%)	0/0% 0/34 (0%)
TERMINAL (d)	---	---	734 (T)	587	---	734 (T)
FIRST INCIDENCE (DAYS)						
STATISTICAL TESTS (F)						
LIFE TABLE	P=0.002 **	(e)	P=0.471	P=0.063	(e)	(e)
INCIDENTAL TUMOR	P=0.016 *	(e)	P=0.471	P=0.177	(e)	(e)
LOGISTIC REGRESSION	P=0.018 *	(e)	P=0.471	P=0.129	(e)	(e)
COCHRAN-ARMITAGE	P=0.021 *	(e)	P=0.500	P=0.121	(e)	(e)
FISHER EXACT						

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES		
	CONTROL	75 PPM	250 PPM	CONTROL	75 PPM	250 PPM
Kidney: Renal Tubule Carcinoma or Adenoma						
TUMOR RATES						
OVERALL (a)	0/50 (0%)	3/50 (6%)	3/50 (6%)	7/50 (14%)	0/50 (0%)	0/50 (0%)
ADJUSTED (b)	0/0% 0/15 (0%)	11.2% 0/14 (0%)	18.4% 2/13 (15%)	62.4% 1/2 (50%)	0/0% 0/31 (0%)	0/0% 0/34 (0%)
TERMINAL (d)	---	617	671	587	---	734 (T)
FIRST INCIDENCE (DAYS)	---					
STATISTICAL TESTS (F)						
LIFE TABLE	P<0.001 **	P=0.120	P=0.111	P<0.001 **	P=0.232	(e)
INCIDENTAL TUMOR	P=0.005 **	P=0.126	P=0.118	P=0.007 **	P=0.232	(e)
LOGISTIC REGRESSION	P=0.003 **	P=0.119	P=0.121	P=0.006 **	P=0.232	(e)
COCHRAN-ARMITAGE	P=0.007 **	P=0.121	P=0.121	P=0.006 **	P=0.210	(e)
FISHER EXACT						P=0.495
Liver Hepatocellular Adenoma						
TUMOR RATES						
OVERALL (a)	0/50 (0%)	3/50 (6%)	0/50 (0%)	0/49 (0%)	0/50 (0%)	0/50 (0%)
ADJUSTED (b)	0/0% 0/15 (0%)	9.7% 0/14 (0%)	0/0% 0/13 (0%)	0/0% 0/2 (0%)	0/0% 0/31 (0%)	0/0% 0/34 (0%)
TERMINAL (d)	---	560	---	---	---	---
FIRST INCIDENCE (DAYS)	---					
STATISTICAL TESTS (F)						
LIFE TABLE	P=0.326N	P=0.112	(e)	(e)	(e)	(e)
INCIDENTAL TUMOR	P=0.208N	P=0.126	(e)	(e)	(e)	(e)
LOGISTIC REGRESSION	P=0.246N	P=0.125	(e)	(e)	(e)	(e)
COCHRAN-ARMITAGE	P=0.259N	P=0.121	(e)	(e)	(e)	(e)
FISHER EXACT						

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES		
	CONTROL	75 PPM	250 PPM	750 PPM	75 PPM	250 PPM
Lung Alveolar/Bronchiolar Adenoma						
TUMOR RATES						
OVERALL (a)	2/50 (4%)	1/50 (2%)	0/50 (0%)	1/50 (2%)	1/50 (2%)	1/50 (2%)
ADJUSTED (b)	12.2%	5.3%	0.0%	3.2%	3.2%	2.9%
TERMINAL (d)	1/15 (7%)	0/14 (0%)	0/13 (0%)	1/31 (3%)	1/31 (3%)	1/34 (3%)
FIRST INCIDENCE (DAYS)	714	713	---	679	734 (T)	734 (T)
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.521	P=0.495N	P=0.270N	P=0.532	P=0.295N	P=0.762
INCIDENTAL TUMOR	P=0.555N	P=0.544N	P=0.227N	P=0.660N	P=0.295N	P=0.762
LOGISTIC REGRESSION	P=0.664	P=0.511N	P=0.236N	P=0.688	P=0.327N	P=0.741N
COCHRAN-ARMITAGE	P=0.500N	P=0.500N	P=0.500N	P=0.500N	P=0.753N	P=0.505N
FISHER EXACT						
Lung Alveolar/Bronchiolar Carcinoma or Alveolar/Bronchiolar Adenoma						
OVERALL (a)	3/50 (6%)	1/50 (2%)	0/50 (0%)	1/50 (2%)	1/50 (2%)	1/50 (2%)
ADJUSTED (b)	16.4%	5.3%	0.0%	3.2%	3.2%	2.9%
TERMINAL (d)	2/15 (13%)	0/14 (0%)	0/13 (0%)	1/31 (3%)	1/31 (3%)	1/34 (3%)
FIRST INCIDENCE (DAYS)	714	713	---	679	734 (T)	734 (T)
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.643	P=0.309N	P=0.146N	P=0.593	P=0.295N	P=0.762
INCIDENTAL TUMOR	P=0.458N	P=0.346N	P=0.122N	P=0.59N	P=0.295N	P=0.762
LOGISTIC REGRESSION	P=0.635N	P=0.310N	P=0.119N	P=0.740N	P=0.295N	P=0.741N
COCHRAN-ARMITAGE	P=0.339N	P=0.339N	P=0.121N	P=0.309N	P=0.327N	P=0.753N
FISHER EXACT						

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES			
	CONTROL		75 PPM	250 PPM	CONTROL		75 PPM
							250 PPM
Mammary Gland Adenoma							
TUMOR RATES	0	0	0	0	0	0	0
OVERALL (a)	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/50 (0%)	1/50 (2%)	2/50 (4%)	1/49 (2%)
ADJUSTED (b)	0/0% (0%)	0/0% (0%)	3/0% (0%)	0/0% (0%)	2/4% (0%)	6/5% (0%)	2/9% (0%)
TERMINAL (d)	0/15 (0%)	0/14 (0%)	0/13 (0%)	0/2 (0%)	0/31 (0%)	2/31 (6%)	1/35 (3%)
FIRST INCIDENCE (DAYS)	---	---	643	---	651	734 (T)	734 (T)
STATISTICAL TESTS (f)							
LIFE TABLE	P=0.807	(e)	P=0.519	(e)	P=0.515N	P=0.488	P=0.491N
INCIDENTAL TUMOR λ *	P=0.721N	(e)	P=0.443	(e)	P=0.523N	P=0.477	P=0.519N
LOGISTIC REGRESSION	P=0.796N	(e)	P=0.500	(e)	P=0.533N	P=0.512	P=0.513N
COCHRAN-ARMITAGE	P=0.786N	(e)	P=0.500	(e)	P=0.558N	P=0.500	P=0.500N
FISHER EXACT							P=0.747
Mammary Gland Carcinoma							
TUMOR RATES	0	0	0	0	0	0	0
OVERALL (a)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	3/50 (6%)	1/50 (2%)	2/50 (4%)
ADJUSTED (b)	0/0% (0%)	0/0% (0%)	0/0% (0%)	0/0% (0%)	9/2% (0%)	3/2% (0%)	4/5% (0%)
TERMINAL (d)	0/15 (0%)	0/14 (0%)	0/13 (0%)	0/2 (0%)	2/31 (6%)	1/31 (3%)	0/34 (0%)
FIRST INCIDENCE (DAYS)	---	---	---	---	704	734 (T)	502
STATISTICAL TESTS (f)							
LIFE TABLE	(e)						
INCIDENTAL TUMOR	(e)						
LOGISTIC REGRESSION	(e)						
COCHRAN-ARMITAGE	(e)						
FISHER EXACT							

TERMINAL SACRIFICE AT 105 WEEKS

EXPERIMENT: 05210 TEST: 03
ANALYSIS OF PRIMARY TUMORS IN RATS (FISCHER 344) -- ETHYLBENZENE

DOSE	MALES			FEMALES		
	CONTROL	75 PPM	250 PPM	CONTROL	75 PPM	250 PPM
Mammary Gland Carcinoma or Adenoma						
TUMOR RATES	#	#	#	#	#	#
OVERALL (a)	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/50 (0%)	4/50 (8%)	2/50 (4%)
ADJUSTED (b)	0/0% 0/15 (0%)	0/0% 0/14 (0%)	3/0% 0/13 (0%)	0/0% 0/2 (0%)	11/4% 2/31 (6%)	6/5% 2/31 (6%)
TERMINAL (d)	---	---	643	---	651	734 (T)
FIRST INCIDENCE (DAYS)						
STATISTICAL TESTS (F)						
LIFE TABLE	P=0.807	(e)	P=0.519	(e)	P=0.327N	P=0.342N
INCIDENTAL TUMOR	P=0.721N	(e)	P=0.443	(e)	P=0.368N	P=0.369N
LOGISTIC REGRESSION	P=0.796N	(e)	P=0.500	(e)	P=0.378N	P=0.322N
COCHERAN ARMITAGE	P=0.786N	(e)	P=0.500	(e)	P=0.385N	P=0.339N
FISHER EXACT						
TUMOR RATES	#	#	#	#	#	#
OVERALL (a)	2/50 (4%)	3/50 (6%)	2/50 (4%)	0/50 (0%)	19/50 (38%)	21/50 (42%)
ADJUSTED (b)	13.3% 2/15 (13%)	21.4% 3/14 (21%)	13.8% 1/13 (8%)	0/0% 0/2 (0%)	55.8% 16/31 (52%)	49.7% 12/31 (39%)
TERMINAL (d)	734 (T)	734 (T)	720	---	687	609
FIRST INCIDENCE (DAYS)						
STATISTICAL TESTS (F)						
LIFE TABLE	P=0.547N	P=0.467	P=0.657	P=0.726N	P=0.512N	P=0.564N
INCIDENTAL TUMOR	P=0.414N	P=0.467	P=0.681	P=0.726N	P=0.530	P=0.566
LOGISTIC REGRESSION	P=0.503N	P=0.467	P=0.681	P=0.726N	P=0.549N	P=0.554N
COCHERAN-ARMITAGE	P=0.116N				P=0.333	P=0.582N
FISHER EXACT						P=0.419

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES		
	CONTROL	75 PPM	250 PPM	CONTROL	75 PPM	250 PPM
Mammary Gland Fibroma						
TUMOR RATES						
OVERALL (a)	0/50 (0%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
ADJUSTED (b)	0/0% 0/15 (0%)	7/2% 0/14 (0%)	0/0% 0/13 (0%)	0/0% 0/2 (0%)	0/0% 0/31 (0%)	0/0% 0/31 (0%)
TERMINAL (d)	---	549	---	---	---	---
FIRST INCIDENCE (DAYS)						
STATISTICAL TESTS (F)						
LIFE TABLE	P=0.495N	P=0.240	(e)	(e)	(e)	(e)
INCIDENTAL TUMOR	P=0.320N	P=0.235	(e)	(e)	(e)	(e)
LOGISTIC REGRESSION	P=0.361N	P=0.242	(e)	(e)	(e)	(e)
COCHRAN-ARMITAGE	P=0.369N	P=0.247	(e)	(e)	(e)	(e)
FISHER EXACT						
Mammary Gland Fibroadenoma or Adenoma						
TUMOR RATES						
OVERALL (a)	2/50 (4%)	5/50 (10%)	3/50 (6%)	0/50 (0%)	20/50 (40%)	21/50 (42%)
ADJUSTED (b)	13/3% 2/15 (13%)	27.1% 3/14 (21%)	16.5% 1/13 (8%)	0/0% 0/2 (0%)	56.9% 16/31 (52%)	55.0% 13/31 (42%)
TERMINAL (d)	734 (T)	549	643	---	651	609
FIRST INCIDENCE (DAYS)					651	651
STATISTICAL TESTS (F)						
LIFE TABLE	P=0.382N	P=0.193	P=0.470	P=0.726N	P=0.421N	P=0.519N
INCIDENTAL TUMOR	P=0.194N	P=0.191	P=0.457	P=0.726N	P=0.475N	P=0.573N
LOGISTIC REGRESSION	P=0.180N	P=0.199	P=0.507	P=0.726N	P=0.454N	P=0.550N
COCHRAN-ARMITAGE	P=0.073N	P=0.218	P=0.500	P=0.247N	P=0.419	P=0.581N
FISHER EXACT						P=0.466

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES				
	CONTROL	75 PPM	250 PPM	750 PPM	CONTROL	75 PPM	250 PPM	750 PPM
Mammary Gland Fibroma, Fibroadenoma, Carcinoma, or Adenoma								
TUMOR RATES								
OVERALL (a)	2/50 (4%)	5/50 (10%)	3/50 (6%)	0/50 (0%)	22/50 (44%)	20/50 (40%)	23/50 (46%)	22/49 (45%)
ADJUSTED (b)	1/3.3%	27.1%	16.5%	0.0%	61.0%	52.3%	57.0%	56.3%
TERMINAL (d)	2/15 (13%)	3/14 (21%)	1/13 (8%)	0/2 (0%)	17/31 (55%)	13/31 (42%)	17/34 (50%)	18/35 (51%)
FIRST INCIDENCE (DAYS)	734 (T)	549	643	---	651	609	502	699
STATISTICAL TESTS (f)								
LIFE TABLE	P=0.382N	P=0.193	P=0.470	P=0.726N	P=0.396N	P=0.412N	P=0.509N	P=0.367N
INCIDENTAL TUMOR	P=0.194N	P=0.191	P=0.457	P=0.726N	P=0.464N	P=0.451N	P=0.563N	P=0.441N
LOGISTIC REGRESSION	P=0.180N	P=0.199	P=0.507	P=0.726N	P=0.449N	P=0.377N	P=0.561N	P=0.368N
COCHRAN-ARMITAGE	P=0.073N				P=0.436			
FISHER EXACT		P=0.218	P=0.500	P=0.247N		P=0.420N	P=0.500	P=0.545
Oral Cavity (Oral Mucosa, Tongue, Pharynx, Tooth, Gingiva)								
Papilloma Squamous or Papilloma								
TUMOR RATES								
OVERALL (a)	3/50 (6%)	0/50 (0%)	1/50 (2%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	1/49 (2%)
ADJUSTED (b)	12.6%	0.0%	7.7%	4.0%	0.0%	0.0%	2.9%	2.9%
TERMINAL (d)	1/15 (7%)	0/14 (0%)	1/13 (8%)	0/2 (0%)	0/31 (0%)	0/31 (0%)	1/34 (3%)	1/35 (3%)
FIRST INCIDENCE (DAYS)	570	---	734 (T)	596	---	---	734 (T)	734 (T)
STATISTICAL TESTS (f)								
LIFE TABLE	P=0.618	P=0.132N	P=0.335N	P=0.639N	P=0.330 (e)	P=0.518 (e)	P=0.518	P=0.524
INCIDENTAL TUMOR	P=0.549N	P=0.130N	P=0.335N	P=0.358N	P=0.330 (e)	P=0.518 (e)	P=0.518	P=0.524
LOGISTIC REGRESSION	P=0.505N	P=0.124N	P=0.303N	P=0.348N	P=0.330 (e)	P=0.518 (e)	P=0.518	P=0.524
COCHRAN-ARMITAGE	P=0.442N				P=0.298			
FISHER EXACT		P=0.121N	P=0.309N	P=0.309N	(e)	P=0.500	P=0.500	P=0.495

EXPERIMENT: 05210 TEST: 03 IN DATE (FISCHER 344) == ETHYL BENZENE

DOSE	MALES			FEMALES		
	CONTROL	75 PPM	250 PPM	CONTROL	75 PPM	250 PPM
Pituitary Gland: Pars Distalis or Unspecified Site Adenoma						
TUMOR RATES						
OVERALL (a)	25/49 (51%)	19/50 (38%)	19/50 (38%)	18/45 (40%)	30/49 (61%)	23/49 (47%)
ADJUSTED (b)	66.7%	65.8%	82.7%	78.5%	61.2%	25/50 (50%)
TERMINAL (d)	7/14 (50%)	6/13 (46%)	1/2 (50%)	23/31 (74%)	17/31 (55%)	63.6%
FIRST INCIDENCE (DAYS)	391	518	420	377	496	449
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.034 *	P=0.222N	P=0.237N	P=0.068	P=0.298N	P=0.122N
INCIDENTAL TUMOR	P=0.362N	P=0.187N	P=0.110N	P=0.300N	P=0.374N	P=0.059N
LOGISTIC REGRESSION	P=0.355N	P=0.147N	P=0.135N	P=0.234N	P=0.377N	P=0.061N
COCHRAN ARMITAGE	P=0.314N				P=0.546	
FISHER EXACT				P=0.135N	P=0.194N	P=0.112N
Pituitary Gland: Pars Distalis or Unspecified Site Carcinoma or Adenoma						
TUMOR RATES						
OVERALL (a)	25/49 (51%)	19/50 (38%)	19/50 (38%)	18/45 (40%)	30/49 (61%)	24/49 (49%)
ADJUSTED (b)	66.7%	65.8%	82.7%	78.5%	62.3%	26/50 (52%)
TERMINAL (d)	7/14 (50%)	6/13 (46%)	1/2 (50%)	23/31 (74%)	17/31 (55%)	66.2%
FIRST INCIDENCE (DAYS)	391	518	420	377	496	449
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.034 *	P=0.222N	P=0.237N	P=0.068	P=0.264N	P=0.149N
INCIDENTAL TUMOR	P=0.362N	P=0.187N	P=0.110N	P=0.300N	P=0.330N	P=0.101N
LOGISTIC REGRESSION	P=0.355N	P=0.147N	P=0.135N	P=0.234N	P=0.332N	P=0.134N
COCHRAN ARMITAGE	P=0.314N				P=0.511N	
FISHER EXACT				P=0.135N	P=0.194N	P=0.155N

EXPERIMENT: 05210 TEST: 03
STATISTICAL ANALYSIS OF PRIMARY TUMORS IN RATS (FISCHER 344) -- ETHYL BENZENE

TERMINAL SACRIFICE AT 105 WEEKS

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES			
	CONTROL	75 PPM	250 PPM	750 PPM	CONTROL	75 PPM	250 PPM
Skin Keratoacanthoma							
TUMOR RATES	0	0	0	0	0	0	0
OVERALL (a)	3/50 (6%)	2/50 (4%)	2/50 (4%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
ADJUSTED (b)	11.2%	9.1%	15.4%	54.5%	0.0%	0.0%	0.0%
TERMINAL (d)	1/15 (7%)	0/14 (0%)	2/13 (15%)	1/2 (50%)	0/31 (0%)	0/34 (0%)	0/35 (0%)
FIRST INCIDENCE (DAYS)	528	637	734 (T)	672	---	---	---
STATISTICAL TESTS (f)							
LIFE TABLE	P=0.306	P=0.516N	P=0.543N	P=0.462	(e)	(e)	(e)
INCIDENTAL TUMOR	P=0.613	P=0.525N	P=0.529N	P=0.682N	(e)	(e)	(e)
LOGISTIC REGRESSION	P=0.608	P=0.501N	P=0.500N	P=0.606N	(e)	(e)	(e)
COCHRAN-ARMITAGE	P=0.491N	P=0.500N	P=0.500N	P=0.500N	(e)	(e)	(e)
FISHER EXACT							
Skin Sarcoma							
TUMOR RATES	0	0	0	0	0	0	0
OVERALL (a)	0/50 (0%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/50 (0%)
ADJUSTED (b)	0.0%	8.8%	0.0%	0.0%	0.0%	3.2%	0.0%
TERMINAL (d)	0/15 (0%)	0/14 (0%)	0/13 (0%)	0/2 (0%)	0/31 (0%)	1/31 (3%)	0/35 (0%)
FIRST INCIDENCE (DAYS)	---	668	---	---	734 (T)	---	---
STATISTICAL TESTS (f)							
LIFE TABLE	P=0.574N	P=0.235	(e)	(e)	(e)	P=0.556N	P=0.500
INCIDENTAL TUMOR	P=0.331N	P=0.202	(e)	(e)	(e)	P=0.556N	P=0.500
LOGISTIC REGRESSION	P=0.447N	P=0.230	(e)	(e)	(e)	P=0.556N	P=0.500
COCHRAN-ARMITAGE	P=0.369N	P=0.247	(e)	(e)	(e)	P=0.580N	P=0.500
FISHER EXACT							

TERMINAL SACRIFICE AT 105 WEEKS

卷之三

DOSE	MALES				FEMALES			
	CONTROL	75 PPM	250 PPM	750 PPM	CONTROL	75 PPM	250 PPM	750 PPM
Skin Squamous Cell Papilloma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	2/50 (4%)	1/50 (2%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	2/50 (4%)	0/49 (0%)
ADJUSTED (b)	9.6%	7.1%	7.7%	0.0%	0.0%	0.0%	5.9%	0.0%
TERMINAL (d)	1/15 (7%)	1/14 (7%)	1/13 (8%)	0/2 (0%)	0/31 (0%)	0/31 (0%)	2/34 (6%)	0/35 (0%)
FIRST INCIDENCE (DAYS)	640	734 (T)	734 (T)	---	---	---	734 (T)	---
STATISTICAL TESTS (f)								
LIFE TABLE	P=0.453N	P=0.536N	P=0.530N	P=0.498N	P=0.670N	P=0.670N	P=0.259	(e)
INCIDENTAL TUMOR	P=0.378N	P=0.502N	P=0.567N	P=0.362N	P=0.670N	P=0.670N	P=0.259	(e)
LOGISTIC REGRESSION	P=0.338N	P=0.512N	P=0.495N	P=0.357N	P=0.670N	P=0.670N	P=0.259	(e)
COCHRAN-ARMITAGE	P=0.194N				P=0.702N	P=0.702N		
FISHER EXACT			P=0.500N	P=0.500N	P=0.247N	P=0.247N	P=0.247	(e)
Skin Squamous Cell Papilloma, Papilloma, Squamous Cell Carcinoma or Keratoacanthoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	5/50 (10%)	3/50 (6%)	3/50 (6%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	3/50 (6%)	0/49 (0%)
ADJUSTED (b)	20.1%	15.6%	23.1%	54.5%	0.0%	0.0%	8.8%	0.0%
TERMINAL (d)	2/15 (13%)	1/14 (7%)	3/13 (23%)	1/2 (50%)	0/31 (0%)	0/31 (0%)	3/34 (9%)	0/35 (0%)
FIRST INCIDENCE (DAYS)	528	637	734 (T)	672	---	---	734 (T)	---
STATISTICAL TESTS (f)								
LIFE TABLE	P=0.483	P=0.393N	P=0.407N	P=0.646	P=0.617N	P=0.617N	P=0.137	(e)
INCIDENTAL TUMOR	P=0.453N	P=0.378N	P=0.417N	P=0.407N	P=0.617N	P=0.617N	P=0.137	(e)
LOGISTIC REGRESSION	P=0.422N	P=0.366N	P=0.353N	P=0.342N	P=0.617N	P=0.617N	P=0.137	(e)
COCHRAN-ARMITAGE	P=0.225N				P=0.656N	P=0.656N		
FISHER EXACT			P=0.357N	P=0.357N	P=0.218N	P=0.218N	P=0.121	(e)

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES		
	CONTROL	75 PPM	250 PPM	CONTROL	75 PPM	250 PPM
Skin squamous Cell Papilloma, Papilloma, or Keratoacanthoma						
TUMOR RATES	#	#	#	#	#	#
OVERALL (a)	5/50 (10%)	3/50 (6%)	3/50 (6%)	2/50 (4%)	0/50 (0%)	2/50 (4%)
ADJUSTED (b)	20.1% 2/15 (13%)	15.6% 1/14 (7%)	23.1% 3/13 (23%)	54.5% 1/2 (50%)	0/0% 0/31 (0%)	5.9% 2/34 (6%)
TERMINAL (d)						
FIRST INCIDENCE (DAYS)	52.8	63.7	73.4 (T)	67.2	---	73.4 (T)
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.483	P=0.393N	P=0.407N	P=0.646	P=0.670N	(e)
INCIDENTAL TUMOR	P=0.453N	P=0.378N	P=0.417N	P=0.407N	P=0.670N	(e)
LOGISTIC REGRESSION	P=0.422N	P=0.368N	P=0.353N	P=0.342N	P=0.670N	(e)
COCHRAN-ARMITAGE	P=0.225N				P=0.702N	(e)
FISHER EXACT		P=0.357N	P=0.357N	P=0.218N	P=0.247	(e)
Testes Adenoma						
TUMOR RATES	#	#	#	#	#	#
OVERALL (a)	36/50 (72%)	33/50 (66%)	40/50 (80%)	44/50 (88%)		
ADJUSTED (b)	100.0% 15/15 (100%)	100.0% 14/14 (100%)	100.0% 13/13 (100%)	100.0% 2/2 (100%)		
TERMINAL (d)						
FIRST INCIDENCE (DAYS)	49.7	53.8	42.0	48.3		
STATISTICAL TESTS (f)						
LIFE TABLE	P<0.001 **	P=0.480N	P=0.259	P<0.001 **		
INCIDENTAL TUMOR	P<0.001 **	P=0.463N	P=0.146	P=0.002 **		
LOGISTIC REGRESSION	P<0.001 **	P=0.404N	P=0.194	P=0.001 **		
COCHRAN-ARMITAGE	P=0.010 **	P=0.333N	P=0.241	P=0.039 *		
FISHER EXACT						

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES				FEMALES			
	CONTROL	75 PPM	250 PPM	750 PPM	CONTROL	75 PPM	250 PPM	750 PPM
Thyroid Gland: C-Cell Adenoma								
TUMOR RATES								
OVERALL (a)	3/50 (6%)	6/49 (12%)	3/50 (6%)	2/50 (4%)	2/48 (4%)	4/50 (8%)	2/50 (4%)	3/49 (6%)
ADJUSTED (b)	20.0%	32.7%	13.0%	30.8%	6.2%	12.4%	5.9%	8.6%
TERMINAL (d)	3/15 (20%)	3/14 (21%)	1/13 (8%)	0/2 (0%)	1/31 (3%)	3/31 (10%)	2/34 (6%)	3/35 (9%)
FIRST INCIDENCE (T)	7/34 (T)	6/17	5/1	6/65	7/21	7/31	7/34 (T)	7/34 (T)
STATISTICAL TESTS (E)								
LIFE TABLE	P=0.366	P=0.223	P=0.633	P=0.208	P=0.580N	P=0.348	P=0.666N	P=0.554
INCIDENTAL TUMOR	P=0.478N	P=0.205	P=0.617	P=0.463	P=0.591N	P=0.307	P=0.677N	P=0.535
LOGISTIC REGRESSION	P=0.539N	P=0.217	P=0.659N	P=0.390	P=0.585N	P=0.354	P=0.675N	P=0.558
COCHRAN ARMITAGE	P=0.217N				P=0.567			
FISHER EXACT		P=0.233	P=0.661N	P=0.500N		P=0.359	P=0.676N	P=0.510
Thyroid Gland: C-Cell Carcinoma								
TUMOR RATES								
OVERALL (a)	2/50 (4%)	6/49 (0%)	0/50 (0%)	0/50 (0%)	0/48 (0%)	0/50 (0%)	0/50 (0%)	1/49 (2%)
ADJUSTED (b)	9.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%
TERMINAL (d)	0/15 (0%)	0/14 (0%)	0/13 (0%)	0/2 (0%)	0/31 (0%)	0/31 (0%)	0/34 (0%)	1/35 (3%)
FIRST INCIDENCE (T)	6/61	---	---	---	---	---	---	7/34 (T)
STATISTICAL TESTS (E)								
LIFE TABLE	P=0.370N	P=0.242N	P=0.238N	P=0.495N	P=0.232	(e)	(e)	P=0.524
INCIDENTAL TUMOR	P=0.211N	P=0.270N	P=0.183N	P=0.207N	P=0.232	(e)	(e)	P=0.524
LOGISTIC REGRESSION	P=0.289N	P=0.245N	P=0.236N	P=0.359N	P=0.213	(e)	(e)	P=0.524
COCHRAN ARMITAGE	P=0.241N							
FISHER EXACT		P=0.253N	P=0.247N	P=0.247N				P=0.505

TERMINAL SACRIFICE AT 105 WEEKS

	MALES			FEMALES		
	CONTROL	75 PPM PPM	750 PPM	CONTROL	75 PPM	250 PPM
Thyroid Gland: C-Cell Carcinoma or Adenoma						
TUMOR RATES						
OVERALL (a)	5/50 (10%)	6/49 (12%)	3/50 (6%)	2/50 (4%)	4/50 (8%)	2/50 (4%)
ADJUSTED (b)	27.5%	32.7%	13.0%	6.2%	12.4%	5.9%
TERMINAL (d)	3/15 (20%)	3/14 (21%)	1/13 (8%)	0/2 (0%)	1/31 (3%)	2/34 (6%)
FIRST INCIDENCE (DAYS)	661	617	591	665	721	734 (T)
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.553	P=0.491	P=0.384N	P=0.444	P=0.436	P=0.348
INCIDENTAL TUMOR	P=0.255N	P=0.441	P=0.363N	P=0.505N	P=0.426	P=0.307
LOGISTIC REGRESSION	P=0.342N	P=0.474	P=0.349N	P=0.676N	P=0.431	P=0.354
COCHRAN-ARMITAGE	P=0.112N	P=0.486	P=0.357N	P=0.218N	P=0.371	P=0.359
FISHER EXACT						P=0.676N
Uterus Polyp Stromal						
TUMOR RATES						
OVERALL (a)				2/50 (4%)	3/50 (6%)	5/50 (10%)
ADJUSTED (b)				6.2%	7.5%	14.7%
TERMINAL (d)				1/31 (3%)	0/31 (0%)	5/34 (15%)
FIRST INCIDENCE (DAYS)				721	601	734 (T)
STATISTICAL TESTS (f)						
LIFE TABLE				P=0.569	P=0.511	P=0.252
INCIDENTAL TUMOR				P=0.543	P=0.571	P=0.244
LOGISTIC REGRESSION				P=0.546	P=0.508	P=0.238
COCHRAN-ARMITAGE				P=0.495	P=0.500	P=0.218
FISHER EXACT						P=0.490

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES				
	CONTROL	75 PPM	250 PPM	750 PPM	CONTROL	75 PPM	250 PPM	750 PPM
Uterus Sarcoma Stromal or Polyp Stromal								
TUMOR RATES								
OVERALL (a)	0/50 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	2/50 (4%)	4/50 (8%)	5/50 (10%)	3/49 (6%)
ADJUSTED (b)	0/0% (0%)	2/7% (0%)	0/0% (0%)	0/0% (0%)	6/2% (3%)	9/3% (0%)	14/7% (0%)	8/6% (0%)
TERMINAL (d)	0/15 (0%)	0/14 (0%)	0/13 (0%)	0/12 (0%)	1/31 (3%)	0/31 (0%)	5/34 (15%)	3/35 (9%)
FIRST INCIDENCE (DAYS)	---	601	---	721	462	734 (T)	734 (T)	734 (T)
STATISTICAL TESTS (f)								
LIFE TABLE					P=0.545N	P=0.355	P=0.252	P=0.554
INCIDENTAL TUMOR					P=0.590	P=0.433	P=0.244	P=0.535
LOGISTIC REGRESSION					P=0.585	P=0.309	P=0.238	P=0.558
COCHRAH-ARMITAGE					P=0.568			
FISHER EXACT						P=0.339	P=0.218	P=0.490
All Organs Histiocytic Sarcoma								
TUMOR RATES								
OVERALL (a)	0/50 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	1/49 (2%)
ADJUSTED (b)	0/0% (0%)	2/7% (0%)	0/0% (0%)	0/0% (0%)	5/7% (0%)	0/0% (0%)	0/0% (0%)	2/9% (0%)
TERMINAL (d)	0/15 (0%)	0/14 (0%)	0/13 (0%)	0/12 (0%)	0/31 (0%)	0/31 (0%)	0/31 (0%)	1/35 (3%)
FIRST INCIDENCE (DAYS)	---	601	---	721	683	---	---	734 (T)
STATISTICAL TESTS (f)								
LIFE TABLE					P=0.664N	P=0.490	P=0.233N	P=0.453N
INCIDENTAL TUMOR					P=0.515N	P=0.523	P=0.641N	P=0.508N
LOGISTIC REGRESSION					P=0.558N	P=0.515	P=0.635N	P=0.477N
COCHRAH-ARMITAGE					P=0.576N	P=0.500	P=0.656N	P=0.528N
FISHER EXACT						(e)	(e)	(e)

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES		
	CONTROL	75 PPM	250 PPM	CONTROL	75 PPM	250 PPM
All Organs Leukemia: Lymphocytic, Monocytic, Mononuclear, or Undifferentiated						
TUMOR RATES	#	#	#	#	#	#
OVERALL (a)	27/50 (54%)	26/50 (52%)	32/50 (64%)	9/50 (18%)	13/50 (26%)	18/50 (36%)
ADJUSTED (b)	74.7%	79.3%	83.1%	62.2%	34.0%	46.2%
TERMINAL (d)	7/15 (47%)	8/14 (57%)	7/13 (54%)	1/2 (50%)	7/31 (23%)	11/31 (35%)
FIRST INCIDENCE (DAYS)	570	582	496	383	507	412
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.412N P<0.001N**	P=0.543 P=0.562N	P=0.264 P=0.175	P=0.287N P<0.001N**	P=0.118N P=0.171N	P=0.217 P=0.196
INCIDENTAL TUMOR	P<0.001N**	P=0.555N	P=0.166	P<0.001N**	P=0.195N P=0.196N	P=0.402 P=0.222 P=0.370
LOGISTIC REGRESSION	P<0.001N**	P=0.500N	P=0.208	P<0.001N**	P=0.194	P=0.450N P=0.330
COCHRAN-ARMITAGE						
FISHER EXACT						
All Organs Mesothelioma: Benign, Malignant, NOS						
TUMOR RATES	#	#	#	#	#	#
OVERALL (a)	0/50 (0%)	2/50 (4%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
ADJUSTED (b)	0.0%	10.7%	2.2%	0.0%	0.0%	0.0%
TERMINAL (d)	0/15 (0%)	0/14 (0%)	0/13 (0%)	0/2 (0%)	0/31 (0%)	0/31 (0%)
FIRST INCIDENCE (DAYS)	---	692	527	---	---	---
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.579N P=0.271N	P=0.250 P=0.202	P=0.496 P=0.501	(e)	(e)	(e)
INCIDENTAL TUMOR	P=0.390N	P=0.229	P=0.525	(e)	(e)	(e)
LOGISTIC REGRESSION	P=0.378N	P=0.247	P=0.500	(e)	(e)	(e)
COCHRAN-ARMITAGE						
FISHER EXACT						

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES				
	CONTROL	75 PPM PPM	250 PPM	750 PPM	CONTROL	75 PPM PPM	250 PPM	750 PPM
All Organs Benign Tumors								
TUMOR RATES								
OVERALL (a)	48/50 (96%)	44/50 (88%)	48/50 (96%)	48/50 (96%)	37/50 (74%)	39/50 (78%)	37/50 (74%)	39/49 (80%)
ADJUSTED (b)	100.0%	100.0%	100.0%	100.0%	90.1%	88.5%	88.0%	86.7%
TERMINAL (d)	15/15 (100%)	14/14 (100%)	13/13 (100%)	2/2 (100%)	27/31 (87%)	26/31 (84%)	29/34 (85%)	29/35 (83%)
FIRST INCIDENCE (DAYS)	391	518	266	377	496	475	449	629
STATISTICAL TESTS (f)								
LIFE TABLE	P<0.001 **	P=0.452N	P=0.475	P<0.001 **	P=0.293N	P=0.441	P=0.341N	P=0.386N
INCIDENTAL TUMOR	P=0.291	P=0.310N	P=0.679N	P=0.725N	P=0.442N	P=0.544N	P=0.316N	P=0.492N
LOGISTIC REGRESSION	P=0.184	P=0.205N	P=0.667	P=0.586	P=0.444N	P=0.565	P=0.381N	P=0.500N
COCHRAN-ARMITAGE	P=0.296				P=0.346			
FISHER EXACT					P=0.691N	P=0.408	P=0.590N	P=0.337
All Organs Malignant Tumors								
TUMOR RATES								
OVERALL (a)	33/50 (66%)	32/50 (64%)	37/50 (74%)	17/50 (34%)	20/50 (40%)	25/50 (50%)	22/50 (44%)	14/49 (29%)
ADJUSTED (b)	63.6%	85.7%	89.6%	85.3%	47.8%	56.7%	49.2%	31.9%
TERMINAL (d)	9/15 (60%)	9/14 (64%)	9/13 (69%)	1/2 (50%)	10/31 (32%)	13/31 (42%)	12/34 (35%)	7/35 (20%)
FIRST INCIDENCE (DAYS)	497	560	420	383	318	412	393	448
STATISTICAL TESTS (f)								
LIFE TABLE	P=0.225	P=0.532	P=0.310	P=0.368	P=0.029N*	P=0.264	P=0.107N	P=0.538
INCIDENTAL TUMOR	P<0.001N**	P=0.576	P=0.265	P=0.054N	P=0.001N**	P=0.316	P=0.453	P=0.184N
LOGISTIC REGRESSION	P=0.001N**	P=0.551N	P=0.247	P=0.055N	P=0.003N**	P=0.335	P=0.527	P=0.165N
COCHRAN-ARMITAGE	P<0.001N**				P=0.044N*			
FISHER EXACT					P=0.500N	P=0.001N**	P=0.211	P=0.420

DOSE	MALES			FEMALES		
	CONTROL	75 PPM PPM	750 PPM	CONTROL	75 PPM	250 PPM
All Organs						
Malignant and Benign Tumors						
TUMOR RATES	#	#	#	#	#	#
OVERALL (a)	49/50 (98%)	45/50 (90%)	50/50 (100%)	50/50 (100%)	42/50 (84%)	45/50 (90%)
ADJUSTED (b)	100.0%	100.0%	100.0%	100.0%	93.3%	90.0%
TERMINAL (d)	15/15 (100%)	14/14 (100%)	13/13 (100%)	2/2 (100%)	28/31 (90%)	26/31 (84%)
FIRST INCIDENCE (DAYS)	391	518	266	377	318	412
STATISTICAL TESTS (f)						
LIFE TABLE	P<0.001 **	P=0.454N	P=0.430	P<0.001 **	P=0.389N	P=0.470N
INCIDENTAL TUMOR	P=0.160	P=0.220N	P=0.500	(e)	P=0.231	P=0.611
LOGISTIC REGRESSION	P=0.059	P=0.151N	P=0.349	(e)	P=0.236	P=0.442
COCHRAN-ARMITAGE	P=0.081				P=0.124	P=0.595
FISHER EXACT		P=0.102N	P=0.500	P=0.500		

(a) Number of tumor-bearing animals / number of animals examined at site.

(b) Kaplan-Meier estimated lifetime tumor incidence after adjustment for intercurrent mortality.

(c) Observed incidence at terminal kill.

(d) Beneath the control group incidence are the P-values corresponding to pairwise comparisons between the controls and that dosed group. The life table analysis regards tumors in animals dying prior to terminal kill as being (directly or indirectly) the cause of death. The incidental tumor test regards these lesions as non-fatal. Logistic regression is an alternative method for analyzing the incidence of non-fatal tumors. For all tests, a negative trend is indicated by "N".

(e) Value of Statistic cannot be computed.

(I) Interim sacrifice

(T) Terminal sacrifice

* Tumor rates based on number of animals necropsied.

** To the right of any statistical result, indicates significance at ($P \leq 0.05$).*** To the right of any statistical result, indicates significance at ($P \leq 0.01$).

NTP
LAB: I. I. T. Research Inst
EXPERIMENT: 05210 TEST: 04
TEST TYPE: CHRONIC
CONT: N01-ES-75193
PATHOLOGIST: TOMLINSON, MIK

STATISTICAL ANALYSIS OF PRIMARY TUMORS
ETHYLBENZENE

CAGES FROM 0000 TO LAST CAGE
ROUTE: RESPIRATORY EXPOSURE WHOLE BODY

CORE STUDY

REASONS FOR REMOVAL:

ALL

REMOVAL DATE RANGE:

ALL

TREATMENT GROUPS:

INCLUDE ALL

RECEIVED
OPPT CRIC

96 JUL -3 AM 11:14

NTP
LAB: I. I. T. Research Inst
EXPERIMENT: 05210 TEST: 04
TEST TYPE: CHRONIC
CONT: N01-ES-75193
PATHOLOGIST: TOMLINSON, MIK

STATISTICAL ANALYSIS OF PRIMARY TUMORS
ETHYLBENZENE
CAGES FROM 0000 TO LAST CAGE
ROUTE: RESPIRATORY EXPOSURE WHOLE BODY

REPORT: PEIRPT08
DATE: 04/24/96
TIME: 10:49:43
NTP C#: 56393
CAS: 100-41-4

FOR ALL DOSES THE TUMOR RATES IN THE FOLLOWING TISSUES/ORGANS ARE BASED ON NUMBER OF TISSUES EXAMINED.
IN OTHER TISSUES/ORGANS, RATES ARE BASED ON NUMBER OF ANIMALS NECROPSIED.

MICE\B6C3F1)

Adrenal Cortex
Adrenal Medulla
Bone Marrow
Brain
Clitoral Gland
Epididymis
Gallbladder
Heart
Islets, Pancreatic
Kidney
Larynx
Liver
Lung
Nose
Ovary
Pancreas
Parathyroid Gland
Pituitary Gland
Preputial Gland
Prostate
Salivary Glands
Spleen
Testes
Thymus
Thyroid Gland
Urinary Bladder

NTP
LAB: I. I. T. Research Inst
EXPERIMENT: 05210 TEST: 04
TEST TYPE: CHRONIC
CONT: N01-ES-5193
PATHOLOGIST: TOMLINSON, MIK

STATISTICAL ANALYSIS OF PRIMARY TUMORS
ETHYLBENZENE

CAGES FROM 0000 TO LAST CAGE
ROUTE: RESPIRATORY EXPOSURE WHOLE BODY

REPORT: PEIRPT08
DATE: 04/24/96
TIME: 10:49:43
NTP C#: 5693
CAS: 100-41-4

SUMMARY OF STATISTICALLY SIGNIFICANT ($P \leq 0.05$) RESULTS
IN THE ANALYSIS OF THE STUDY OF ETHYLBENZENE

MALE MICE	
ORGAN	MORPHOLOGY
Islets, Pancreatic	Carcinoma or Adenoma
Liver	Hepatocellular Carcinoma
Lung	Hepatocellular Carcinoma or Hepatoblastoma
All Organs	Alveolar/Bronchiolar Adenoma
	Alveolar/Bronchiolar Carcinoma or Alveolar/Bronchiolar Adenoma
	Benign Tumors

FEMALE MICE	
ORGAN	MORPHOLOGY
Harderian Gland	Adenoma
Liver	Hepatocellular Adenoma
	Hepatocellular Carcinoma
	Hepatocellular Carcinoma or Hepatoblastoma
	Hepatocellular Carcinoma or Hepatocellular Adenoma
	Hepatocellular Carcinoma or Hepatocellular Adenoma, or Hepatoblastoma
All Organs	Malignant Tumors
	Malignant and Benign Tumors

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES			
	CONTROL	75 PPM PPM	250 PPM PPM	750 PPM PPM	CONTROL	75 PPM PPM	250 PPM PPM
Adrenal Medulla							
Pheochromocytoma: Benign, Complex, Malignant, NOS							
TUMOR RATES							
OVERALL (a)	0/47 (0%)	0/46 (0%)	0/48 (0%)	0/48 (0%)	0/47 (0%)	1/50 (2%)	2/50 (4%)
ADJUSTED (b)	0/0%	0/0%	0/0%	0/0%	0/0%	2/6% 1/38 (3%)	4/6% 1/40 (3%)
TERMINAL (d)	0/28 (0%)	0/36 (0%)	0/32 (0%)	0/30 (0%)	0/35 (0%)	1/38 (3%)	0/36 (0%)
FIRST INCIDENCE (DAYS)	---	---	---	---	---	730 (T)	659
STATISTICAL TESTS (f)							
LIFE TABLE	(e)	(e)	(e)	(e)	(e)	P=0.508N	P=0.516
INCIDENTAL TUMOR	(e)	(e)	(e)	(e)	(e)	P=0.453N	P=0.516
LOGISTIC REGRESSION	(e)	(e)	(e)	(e)	(e)	P=0.512N	P=0.516
COCHERAN-ARMITAGE	(e)	(e)	(e)	(e)	(e)	P=0.511N	P=0.251
FISHER EXACT							
Harderian Gland							
Adenoma							
TUMOR RATES	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	3/50 (6%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	1/50 (2%)
ADJUSTED (b)	3.6%	8.0%	6.3%	0.0%	0.0%	0.0%	2.5%
TERMINAL (d)	1/28 (4%)	2/36 (6%)	2/32 (6%)	0/30 (0%)	0/35 (0%)	0/36 (0%)	1/40 (3%)
FIRST INCIDENCE (DAYS)	729 (T)	709	729 (T)	---	---	730 (T)	730 (T)
STATISTICAL TESTS (f)							
LIFE TABLE	P=0.192N	P=0.398	P=0.547	P=0.486N	P=0.021 *	(e)	P=0.527
INCIDENTAL TUMOR	P=0.153N	P=0.348	P=0.547	P=0.486N	P=0.021 *	(e)	P=0.527
LOGISTIC REGRESSION	P=0.182N	P=0.375	P=0.547	P=0.486N	P=0.021 *	(e)	P=0.527
COCHERAN-ARMITAGE	P=0.183N				P=0.021 *	(e)	P=0.131
FISHER EXACT							

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES		
	CONTROL	75 PPM	250 PPM	750 PPM	250 PPM	750 PPM
Harderian Gland Carcinoma or Adenoma						
TUMOR RATES	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	3/50 (6%)	2/50 (4%)	0/50 (0%)	1/50 (2%)	0/50 (0%)
ADJUSTED (b)	3.6%	8.0%	6.3%	0.0%	2.4%	0.0%
TERMINAL (d)	1/26 (4%)	2/36 (6%)	2/32 (6%)	0/30 (0%)	0/35 (0%)	0/38 (0%)
FIRST INCIDENCE (DAYS)	729 (T)	709	729 (T)	---	639	730 (T)
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.192N	P=0.398	P=0.547	P=0.486N	P=0.683	P=0.486N
INCIDENTAL TUMOR	P=0.153N	P=0.348	P=0.547	P=0.426N	P=0.559	P=0.531N
LOGISTIC REGRESSION	P=0.162N	P=0.375	P=0.547	P=0.486N	P=0.81	P=0.516N
COCHRAN-ARMITAGE	P=0.183N				P=0.080	
FISHER EXACT						
	P=0.309		P=0.500	P=0.500N		P=0.500N
Islets, Pancreatic Carcinoma or Adenoma						
TUMOR RATES	#	#	#	#	#	#
OVERALL (a)	0/49 (0%)	0/50 (0%)	0/48 (0%)	2/48 (4%)	0/50 (0%)	1/50 (2%)
ADJUSTED (b)	0.0%	0.0%	0.0%	6.1%	0.0%	2.5%
TERMINAL (d)	0/28 (0%)	0/36 (0%)	0/32 (0%)	1/30 (3%)	0/35 (0%)	1/40 (3%)
FIRST INCIDENCE (DAYS)	---	---	---	669	---	730 (T)
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.038 *	(e)	(e)	P=0.261	P=0.786N	(e)
INCIDENTAL TUMOR	P=0.071	(e)	(e)	P=0.335	P=0.786N	(e)
LOGISTIC REGRESSION	P=0.040 *	(e)	(e)	P=0.247	P=0.786N	(e)
COCHRAN-ARMITAGE	P=0.040 *	(e)	(e)	P=0.790N	P=0.790N	(e)
FISHER EXACT				P=0.242		P=0.500 (e)

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES		
	CONTROL	75 PPM PPM	750 PPM PPM	CONTROL	75 PPM PPM	250 PPM PPM
Liver Hepatocellular Carcinoma or Hepatoblastoma						
TUMOR RATES						
OVERALL (a)	17/50 (34%)	10/50 (20%)	13/50 (26%)	10/50 (20%)	7/50 (14%)	4/50 (8%)
ADJUSTED (b)	41.1%	24.1%	28.5%	23.8%	17.3%	9.7%
TERMINAL (d)	5/28 (18%)	6/36 (17%)	3/32 (9%)	1/30 (3%)	3/35 (9%)	2/38 (5%)
FIRST INCIDENCE (DAYS)	289	514	480	430	565	602
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.049N*	P=0.170N	P=0.083N	P=0.029 *	P=0.238N	P=0.127N
INCIDENTAL TUMOR	P=0.128N	P=0.197N	P=0.267N	P=0.031 *	P=0.296N	P=0.152N
LOGISTIC REGRESSION	P=0.167N	P=0.101N	P=0.321N	P=0.022 *	P=0.259N	P=0.150N
COCHRAN-ARMITAGE	P=0.173N			P=0.022 *		
FISHER EXACT					P=0.262N	P=0.159N
						P=0.154
Liver Hepatocellular Carcinoma or Hepatocellular Adenoma						
TUMOR RATES						
OVERALL (a)	27/50 (54%)	24/50 (48%)	30/50 (60%)	27/50 (54%)	13/50 (26%)	12/50 (24%)
ADJUSTED (b)	63.7%	54.9%	64.6%	66.7%	32.8%	28.2%
TERMINAL (d)	13/28 (46%)	17/36 (47%)	16/32 (50%)	17/30 (57%)	9/35 (26%)	8/38 (21%)
FIRST INCIDENCE (DAYS)	289	360	480	430	565	562
STATISTICAL TESTS (f)						
LIFE TABLE	P=0.413	P=0.127N	P=0.505N	P=0.433N	P=0.004 **	P=0.426N
INCIDENTAL TUMOR	P=0.469	P=0.419N	P=0.475	P=0.545N	P=0.003 **	P=0.508N
LOGISTIC REGRESSION	P=0.465	P=0.321N	P=0.389	P=0.521N	P=0.002 **	P=0.478N
COCHRAN-ARMITAGE	P=0.447				P=0.002 **	
FISHER EXACT						P=0.500N
						P=0.579N
						P=0.412
						P=0.011 *

TERMINAL SACRIFICE AT 105 WEEKS

DOSE	MALES			FEMALES				
	CONTROL	75 PPM PPM	250 PPM	750 PPM	CONTROL	75 PPM	250 PPM	750 PPM
Liver Hepatocellular Carcinoma, Hepatocellular Adenoma, or Hepatoblastoma								
TUMOR RATES								
OVERALL (a)	27/50 (54%)	24/50 (48%)	30/50 (60%)	27/50 (54%)	13/50 (26%)	12/50 (24%)	15/50 (30%)	25/50 (50%)
ADJUSTED (b)	63.7%	54.9%	64.6%	66.7%	32.8%	28.2%	34.5%	57.9%
TERMINAL (d)	13/28 (46%)	17/36 (47%)	16/32 (50%)	17/30 (57%)	9/35 (26%)	8/38 (21%)	12/40 (30%)	19/37 (51%)
FIRST INCIDENCE (DAYS)	289	360	480	430	565	562	659	612
STATISTICAL TESTS (f)								
LIFE TABLE	P=0.413	P=0.127N	P=0.505N	P=0.433N	P=0.004 **	P=0.426N	P=0.562	P=0.029 *
INCIDENTAL TUMOR	P=0.469	P=0.419N	P=0.475	P=0.545N	P=0.003 **	P=0.508N	P=0.537	P=0.020 *
LOGISTIC REGRESSION	P=0.465	P=0.321N	P=0.389	P=0.521N	P=0.002 **	P=0.478N	P=0.471	P=0.015 *
COCHRAN-ARMITAGE	P=0.447				P=0.002 **			
FISHER EXACT		P=0.345N	P=0.343	P=0.579N		P=0.500N	P=0.412	P=0.011 *
Lung Alveolar/Bronchiolar Adenoma								
TUMOR RATES								
OVERALL (a)	5/50 (10%)	9/50 (18%)	10/50 (20%)	16/50 (32%)	4/50 (8%)	4/50 (8%)	5/49 (10%)	8/50 (16%)
ADJUSTED (b)	15.1%	22.7%	27.4%	47.3%	10.9%	10.5%	11.4%	21.6%
TERMINAL (d)	2/28 (7%)	6/36 (17%)	6/32 (19%)	13/30 (43%)	3/35 (9%)	4/38 (11%)	2/40 (5%)	8/37 (22%)
FIRST INCIDENCE (DAYS)	616	531	602	418	694	730 (T)	682	730 (T)
STATISTICAL TESTS (f)								
LIFE TABLE	P=0.005 **	P=0.341	P=0.218	P=0.014 *	P=0.106	P=0.598N	P=0.579	P=0.206
INCIDENTAL TUMOR	P=0.008 **	P=0.179	P=0.205	P=0.006 **	P=0.141	P=0.619N	P=0.642	P=0.222
LOGISTIC REGRESSION	P=0.006 **	P=0.234	P=0.193	P=0.009 **	P=C.111	P=0.618N	P=0.525	P=0.218
COCHRAN-ARMITAGE	P=0.006 **				P=0.096			
FISHER EXACT		P=0.194	P=0.131	P=0.006 **		P=0.643N	P=0.487	P=0.178

END OF JOB

VAXE::BROWN_V

JOB 347

0521004

29-MAY-1996 19:01 %JBC-F-JOBABORT, job aborted during execution

29-MAY-1996 19:01 %LPS-W-INTERRUPT, interrupt: The job has been interrupted

Owner UIC: [BROWN_V]
Account: CAN

Priority: 100
Submit queue: PS_A025
Submitted: 28-MAY-1996 09:18
Printer queue: PS_A025
Printer device: PS20A
Started: 28-MAY-1996 10:56
Finished: 29-MAY-1996 19:01

Qualifiers: /FORM=CPS\$DEFAULT
Parameters: DATA_TYPE=ANSI, LAYUP_DEFINITION=LPS\$HOLES, OUTPUT_TRAY=LOWER, PAGE_ORIENTATION=LANDSCAPE, PAGE_SIZE=A, SHEET_SIZE=A, SIDES=TWO
Sheets printed: 23

NTP Experiment-Test: 05210-04
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
ETHYLBENZENE

Report: PEIRPT03
Date: 04/23/96
Time: 08:53:41

CORE STUDY

Facility: I. I. T. Research Institute

Chemical CAS #: 100-41-4

Lock Date: 10/02/92

Cage Range: All

Reasons For Removal: All

Removal Date Range: All

Treatment Groups: Include All

RECEIVED
OPPT CBIC

96 JUL -3 AM 11:14

a Number of animals examined microscopically at site and number of animals with lesion

Page 1

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT03
 Date: 04/23/96
 Time: 08:53:41

B6C3F1 MICE FEMALE

	CONTROL	75 PPM	250 PPM	750 PPM
DISPOSITION SUMMARY				
Animals Initially In Study	50	50	50	50
Early Deaths	5	6	1	4
Moribund Sacrifice	9	6	8	9
Natural Death	1	1	1	
Accidentally Killed				
Survivors	34	38	40	37
Terminal Sacrifice	1			
Natural Death				
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Gallbladder	(44)	(44)	(44)	(46)
Infiltration Cellular	1 (2%)			
Intestine Small, Duodenum	(45)	(48)	(47)	(46)
Ulcer				1 (2%)
Intestine Small, Jejunum	(46)	(46)	(46)	(45)
Peyer's Patch, Hyperplasia				1 (2%)
Intestine Small, Ileum	(47)	(47)	(47)	(46)
Peyer's Patch, Hyperplasia		1 (2%)		
Liver	(50)	(50)	(50)	(50)
Angiectasis		1 (2%)	4 (8%)	3 (6%)
Basophilic Focus	3 (6%)			
Clear Cell Focus	1 (2%)		1 (2%)	
Eosinophilic Focus	5 (10%)	7 (14%)	6 (12%)	22 (44%)
Hemorrhage			1 (2%)	1 (2%)
Hepatodiaphragmatic Nodule			2 (4%)	
Infiltration Cellular	3 (6%)			
Inflammation	1 (2%)	3 (6%)	1 (2%)	1 (2%)
Mineralization				
Mixed Cell Focus				
Necrosis	1 (2%)	4 (8%)	3 (6%)	4 (8%)
Pigmentation, Hemosiderin	1 (2%)	1 (2%)		
Bile Duct, Cyst				
Hepatocyte, Hypertrophy				
Hepatocyte, Necrosis				
Hepatocyte, Syncytial Alteration				
Hepatocyte, Vacuolization Cytoplasmic				
Serosa, Inflammation				
Mesentery				
Fat, Necrosis	(2)	1 (2%)	1 (2%)	1 (2%)
Pancreas	(50)	2 (100%)	2 (4%)	1 (2%)
Angiectasis				
Atrophy			2 (4%)	1 (2%)

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
 ETHYLBENZENE

Report: PEIRPT03
 Date: 04/23/96
 Time: 08:53:41

	B6C3F1 MICE FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
ALIMENTARY SYSTEM - CONT					
Cyst		1 (2%)			
Degeneration		1 (2%)			
Fibrosis		1 (2%)			
Infiltration Cellular	7 (14%)	12 (24%)	12 (24%)	10 (20%)	
Necrosis	1 (2%)	1 (2%)			
Acinus, Hyperplasia					
Duct, Cyst	1 (2%)				
Salivary Glands	(50)	(50)	(50)	(50)	1 (2%)
Atrophy		1 (2%)			
Infiltration Cellular	30 (60%)	32 (64%)	33 (66%)	30 (60%)	
Stomach, Forestomach	(50)	(49)	(48)	(50)	2 (4%)
Hyperplasia					
Ulcer			1 (2%)		
Epithelium, Cyst				2 (4%)	2 (4%)
Epithelium, Hyperplasia		2 (4%)			1 (2%)
Stomach, Glandular	(50)	(49)	(48)	(50)	
Infiltration Cellular	1 (2%)				
Glands, Cyst	1 (2%)				
Glands, Hyperplasia				1 (2%)	
Serosa, Infiltration Cellular				1 (2%)	
CARDIOVASCULAR SYSTEM					
Heart	(50)	(49)	(50)	(50)	
Cardiomyopathy	10 (20%)	23 (47%)	23 (46%)	15 (30%)	
ENDOCRINE SYSTEM					
Adrenal Cortex	(47)	(50)	(50)		(49)
Accessory Adrenal Cortical Nodule	2 (4%)	1 (2%)			
Degeneration	12 (26%)	4 (8%)	4 (8%)		5 (10%)
Hemorrhage	2 (4%)	1 (2%)	2 (4%)		3 (6%)
Hyperplasia	3 (6%)	5 (10%)	3 (6%)		3 (6%)
Infiltration Cellular		2 (4%)			
Inflammation		3 (6%)			
Necrosis	1 (2%)				
Vacuolization Cytoplasmic	1 (2%)				
Capsule, Hyperplasia	46 (98%)	49 (98%)	48 (96%)		46 (94%)
Adrenal Medulla	(47)	(50)	(50)		(49)
Hemorrhage	1 (2%)				
Hyperplasia	2 (4%)	3 (6%)		1 (2%)	
Islets, Pancreatic	(50)	(50)	(50)		(49)
Hyperplasia		2 (4%)	2 (4%)		
Infiltration Cellular	1 (2%)	(24)	(34)	(27)	
Parathyroid Gland	(26)				

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
 ETHYLBENZENE

Report: PEIRPT03
 Date: 04/23/96
 Time: 08:53:41

	CONTROL	75 PPM	250 PPM	750 PPM
B6C3F1 MICE FEMALE				
ENDOCRINE SYSTEM - CONT				
Infiltration Cellular				
Pituitary Gland	(48)	1 (4%)	(47)	(49) (4%)
Pars Distalis, Angiectasis		1 (2%)	4 (9%)	2 (4%)
Pars Distalis, Cyst	3 (6%)	12 (24%)	1 (2%)	1 (2%)
Pars Distalis, Hemorrhage	10 (21%)		23 (49%)	22 (45%)
Pars Distalis, Hyperplasia				1 (2%)
Pars Distalis, Necrosis				1 (2%)
Pars Intermedia, Hyperplasia	2 (4%)	1 (2%)		1 (2%)
Thyroid Gland	(50)	(50)	(50)	(50)
Infiltration Cellular				
Follicle, Degeneration	1 (2%)		1 (2%)	
Follicular Cell, Hyperplasia	18 (36%)	23 (46%)	25 (50%)	35 (70%)
GENERAL BODY SYSTEM				
Tissue NOS	(1)	(6)	(4)	(1)
Fat, Necrosis		4 (67%)	3 (75%)	1 (100%)
GENTITAL SYSTEM				
Cervix				
Clitoral Gland	(41)	(47)	(48)	(48)
Atrophy			1 (2%)	1 (2%)
Degeneration				1 (2%)
Ovary				
Angiectasis	(49)	(50)	(49)	(49)
Atrophy	2 (4%)	1 (2%)	1 (2%)	
Cyst		1 (2%)	1 (2%)	
Hemorrhage	8 (16%)	8 (16%)	10 (20%)	10 (20%)
Infiltration Cellular			1 (2%)	
Mineralization			2 (4%)	1 (2%)
Uterus				
Angiectasis	(50)	(50)	(50)	(50)
Degeneration	2 (4%)	1 (2%)	1 (2%)	1 (2%)
Hemorrhage				1 (2%)
Infiltration Cellular				1 (2%)
Inflammation				1 (2%)
Thrombosis	3 (6%)		1 (2%)	
Endometrium, Hyperplasia	44 (88%)	46 (92%)	47 (94%)	46 (92%)

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PEIRPT03
 Date: 04/23/96
 Time: 08:53:41

B6C3F1 MICE FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
HEMATOPOIETIC SYSTEM				
Bone Marrow	(48)	(50)	(50)	(50)
Hematopoietic Cell Proliferation		1 (2%)		1 (2%)
Infiltration Cellular, Histiocyte	1	(2%)		
Inflammation				
Myelofibrosis	3	(6%)	1 (2%)	2 (4%)
Pigmentation, Hemosiderin	1	(2%)	1 (2%)	1 (2%)
Myeloid Cell, Hyperplasia	(3)		(7)	(5)
Lymph Node				
Iliac, Hyperplasia		1	(14%)	1 (20%)
Inguinal, Hyperplasia	1	(33%)		
Inguinal, Pigmentation, Hemosiderin	1	(33%)	2 (29%)	1 (20%)
Lumbar, Hyperplasia				
Pancreatic, Hyperplasia	1	(33%)		
Renal, Hyperplasia				
Renal, Necrosis	(32)	(40)	(29)	(38)
Lymph Node, Bronchial		2 (5%)	1 (3%)	2 (5%)
Hyperplasia	(47)	(48)	(47)	(44)
Lymph Node, Mandibular	1	(2%)	2 (4%)	2 (5%)
Hyperplasia	(48)	(48)	(46)	(44)
Lymph Node, Mesenteric	1	(2%)		
Hyperplasia	4	(8%)	3 (6%)	2 (5%)
Hematopoietic Cell Proliferation				
Inflammation	1	(2%)	2 (4%)	
Granulomatous		1 (2%)	1 (2%)	
Necrosis	(34)	(42)	(41)	(31)
Lymph Node, Mediastinal	3	(9%)	4 (10%)	2 (6%)
Hyperplasia	1	(3%)		
Histiocytic				
Spleen	(50)	(50)	(50)	(49)
Hematopoietic Cell Proliferation	4	(8%)	7 (14%)	2 (4%)
Hyperplasia	1	(2%)		
Necrosis				
Pigmentation, Hemosiderin	4	(8%)	1 (2%)	1 (2%)
Lymphoid Follicle, Hyperplasia	9	(18%)	5 (10%)	3 (6%)
Thymus	(42)	(44)	(45)	(46)
Atrophy	5	(12%)	5 (11%)	6 (13%)
Hyperplasia	1	(2%)	2 (5%)	

INTEGMENTARY SYSTEM

Mammary Gland	(49)	(50)	(48)	(49)
Galactocèle		1 (2%)	1 (2%)	
Hyperplasia		1 (2%)	1 (2%)	(50)
Skin	(50)	(50)	(49)	1 (2%)
Fibrosis				

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PEIRPT03
 Date: 04/23/96
 Time: 08:53:41

	B6C3F1 MICE FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
INTEGUMENTARY SYSTEM - CONT					
Inflammation		1 (2%)		2 (4%)	
Necrosis		1 (2%)		2 (4%)	
Ulcer		1 (2%)		2 (4%)	
MUSCULOSKELETAL SYSTEM					
Bone	(49)	(50)	(50)	(50)	(50)
Arthritis					
Fracture					
Periosteum, Femur, Inflammation	1 (2%)	2 (4%)	1 (2%)		
NERVOUS SYSTEM					
Brain	(50)	(50)	(50)	(50)	(50)
Hemorrhage	2 (4%)				
Mineralization	19 (38%)	17 (34%)	26 (52%)	25 (50%)	
Cerebellum, Atrophy	1 (2%)				
Cerebrum, Atrophy	2 (4%)	1 (2%)	2 (4%)		
Cerebrum, Gliosis					
Cerebrum, Hemorrhage					
Medulla, Atrophy					
Medulla, Hemorrhage	1 (2%)				
Meninges, Infiltration	1 (2%)	2 (4%)	1 (2%)		
Spinal Cord	(1)				
Hemorrhage					
Myelin, Degeneration	1 (100%)	1 (100%)			
RESPIRATORY SYSTEM					
Larynx	(49)	(49)	(47)	(48)	
Degeneration					
Infiltration Cellular	1 (2%)				
Glands, Degeneration					
Glands, Inflammation					
Lung	(50)	(50)	(49)	(50)	
Hemorrhage	1 (2%)				
Hyperplasia, Lymphoid					
Infiltration Cellular, Histiocyte	1 (2%)	2 (4%)	1 (2%)		
Alveolar Epithelium, Hyperplasia					
Alveolar Epithelium, Metaplasia					
Vain, Thrombosis	1 (2%)	1 (2%)	3 (6%)	1 (2%)	
Nose	(49)	(50)	(50)	(50)	
Hemorrhage	1 (2%)				
Inflammation	3 (6%)	2 (4%)	3 (6%)		

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT03
Date: 04/23/96
Time: 08:53:41

		CONTROL	75 PPM	250 PPM	750 PPM
RESPIRATORY SYSTEM - CONT					
Nasolacrimal Duct, Inflammation	1 (2%)				
Respiratory Epithelium, Metaplasia, Squamous	2 (4%)				
	1 (2%)				
SPECIAL SENSES SYSTEM					
None					
URINARY SYSTEM					
Kidney	(50)	(50)	(50)	(50)	(50)
Casts Protein	1 (2%)	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Infiltration Cellular					
Mineralization					
Nephropathy	13 (26%)	7 (14%)	9 (18%)	1 (2%)	1 (2%)
Cortex, Cyst					
Cortex, Metaplasia, Osseous		1 (2%)	1 (2%)		21 (42%)
Urinary Bladder	(47)	(48)	(47)	(49)	
Hemorrhage	1 (2%)				
Infiltration Cellular	4 (9%)	4 (8%)	4 (9%)	5 (10%)	
Inflammation	1 (2%)				
Ulcer	1 (2%)				

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
 ETHELBENZENE

Report: PEIRPT03
 Date: 04/23/96
 Time: 08:33:41

	CONTROL	75 PPM	250 PPM	750 PPM
DISPOSITION SUMMARY				
Animals Initially In Study	50	50	50	50
Early Deaths				
Moribund Sacrifice	6	2	5	6
Natural Death	15	12	13	13
Accidently Killed	1			1
Survivors	1			
Terminal Sacrifice	28	36	31	30
Natural Death		1		
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Gallbladder	(33)	(39)	(37)	(38)
Epithelium, Hyperplasia				
Intestine Small, Duodenum	(45)	(48)	(43)	(45)
Parasite Metazoan				
Epithelium, Hyperplasia			1 (2%)	1 (2%)
Intestine Small, Jejunum	(44)	(46)	1 (2%)	1 (2%)
Cyst				
Epithelium, Dysplasia			1 (2%)	1 (2%)
Peyer's Patch, Hyperplasia	1 (2%)	1 (2%)		
Intestine Small, Ileum	(42)	(46)	(44)	(41)
Peyer's Patch, Hyperplasia	1 (2%)			
Liver	(50)	(50)	(50)	(50)
Angiectasis				1 (2%)
Basophilic Focus	3 (6%)	3 (6%)	5 (10%)	4 (8%)
Clear Cell Focus	5 (10%)	4 (8%)	7 (14%)	3 (6%)
Cyst	1 (2%)	1 (2%)		
Eosinophilic Focus	6 (12%)	8 (16%)	8 (16%)	12 (24%)
Eosinophilic Focus, Multiple	1 (2%)	1 (2%)		
Fibrosis				1 (2%)
Hemorrhage				2 (4%)
Hepatodiaphragmatic Nodule		2 (4%)	1 (2%)	
Inflammation, Chronic				
Mineralization				
Mixed Cell Focus	3 (6%)	2 (4%)	1 (2%)	1 (2%)
Necrosis	7 (14%)	8 (16%)	10 (20%)	10 (20%)
Thrombosis				
Hepatocyte, Hyperplasia				1 (2%)
Hepatocyte, Hypertrophy				1 (2%)
Hepatocyte, Necrosis	1 (2%)	1 (2%)	3 (6%)	17 (34%)
Hepatocyte, Syncytial Alteration	1 (2%)	5 (10%)	8 (16%)	10 (20%)
Hepatocyte, Vacuolization Cytoplasmic	4 (8%)	2 (4%)	4 (8%)	23 (46%)
Vein, Thrombosis	1 (2%)		2 (4%)	3 (6%)

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PEIRPT03
 Date: 04/23/96
 Time: 08:53:41

	B6C3F1 MICE MALE	CONTROL	75 PPM	250 PPM	750 PPM
ALIMENTARY SYSTEM - CONT					
Pancreas	(49)	(50)	(48)	(48)	(48)
Inflammation	1 (2%)	1 (2%)			
Acinus, Hyperplasia	1 (2%)	1 (2%)			1 (2%)
Duct, Cyst	1 (2%)				1 (2%)
Duct, Degeneration	1 (2%)				
Duct, Fibrosis	1 (2%)				
Salivary Glands	(50)	(50)	(50)	(50)	(50)
Infiltration Cellular	21 (42%)	26 (52%)	17 (34%)	20 (40%)	
Stomach, Forestomach	(48)	(50)	(50)		
Cyst	1 (2%)				
Ulcer	1 (2%)				
Epithelium, Hyperplasia					
Serosa, Inflammation	(48)	(50)	(50)		
Stomach, Glandular	1 (2%)				
Infiltration Cellular					
Inflammation	1 (2%)			1 (2%)	
Metaplasia					
Mineralization			2 (4%)		
Tongue					
Inflammation, Granulomatous					
Tooth					
Developmental Malformation			(1)	1 (100%)	
		1 (100%)	(1)	(1)	
CARDIOVASCULAR SYSTEM					
Heart	(50)	(50)	(50)	(50)	(50)
Cardiomyopathy	18 (36%)	36 (72%)	29 (58%)	25 (50%)	
Inflammation	2 (4%)				
Myocardium, Mineralization	1 (2%)				
Pericardium, Hyperplasia	1 (2%)				
ENDOCRINE SYSTEM					
Adrenal Cortex	(47)	(47)	(48)	(48)	(48)
Accessory Adrenal Cortical Nodule	1 (2%)				
Degeneration	1 (2%)	2 (4%)	1 (2%)		
Hemorrhage	1 (2%)				
Hyperplasia	13 (28%)	8 (17%)	9 (19%)	1 (2%)	
Vacuolization Cytoplasmic	1 (2%)			4 (8%)	
Capsule, Hyperplasia	19 (40%)	22 (47%)	20 (42%)	17 (35%)	
Adrenal Medulla	(47)	(46)	(48)	(48)	
Degeneration					
Hyperplasia				1 (2%)	
Mineralization				2 (4%)	
Islets, Pancreatic	(49)	(50)	(48)	(48)	(48)

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

ETHYLBENZENE

Report: BEIRPT03
 Date: 04/23/96
 Time: 08:53:41

	CONTROL	75 PPM	250 PPM	750 PPM
B6C3F1 MICE MALE				
ENDOCRINE SYSTEM - CONT				
Degeneration	5 (10%)	5 (10%)	1 (2%)	1 (2%)
Hyperplasia	(44)	(45)	0 (17%)	(45)
Pituitary Gland				(47)
Pars Distalis, Cyst	1 (2%)	1 (2%)	2 (4%)	1 (2%)
Pars Distalis, Hyperplasia	(50)	(50)	1 (2%)	(50)
Thyroid Gland				(50)
Follicle, Cyst				(50)
Follicular Cell, Hyperplasia	21 (42%)	21 (42%)	29 (59%)	32 (64%)
GENERAL BODY SYSTEM				
Tissue NOS	(2)	(3)	(1)	(2)
Cyst		1 (33%)		
Fat, Necrosis		2 (67%)	1 (50%)	
GENITAL SYSTEM				
Epididymis	(49)	(50)	(50)	(50)
Atypia Cellular	1 (2%)	1 (2%)		
Cyst	1 (2%)			2 (4%)
Degeneration				
Fibrosis				
Granuloma Sperm	2 (4%)	1 (2%)	1 (2%)	
Infiltration Cellular		1 (2%)		
Inflammation				
Mineralization				
Bilateral, Fibrosis	1 (2%)			
Penis				
Concretion	(1)	(2)		
Inflammation		1 (100%)	1 (50%)	
Preputial Gland	(48)	(49)	(48)	(49)
Cyst				
Degeneration	3 (6%)	3 (6%)	9 (19%)	
Degeneration, Cystic		1 (2%)		
Fibrosis				
Hyperplasia	1 (2%)	1 (2%)	1 (2%)	
Infiltration Cellular	1 (2%)	5 (10%)	6 (13%)	
Inflammation	6 (13%)	11 (22%)	11 (23%)	
Mineralization		1 (2%)		
Necrosis				
Prostate				
Atrophy	(46)	(49)	1 (2%)	(50)
Infiltration Cellular		1 (2%)	2 (4%)	
Inflammation	6 (13%)	5 (10%)	5 (10%)	
Seminal Vesicle	(49)	(50)	(50)	(50)

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
 ETHYL BENZENE

Report: PEIRPT03
 Date: 04/23/96
 Time: 08:53:41

	B6C3F1 MICE MALE	CONTROL	75 PPM	250 PPM	750 PPM
GENITAL SYSTEM - CONT					
Atrophy		2 (4%)	1 (2%)	3 (6%)	1 (2%)
Degeneration		19 (39%)	26 (52%)	16 (32%)	22 (44%)
Inflammation		1 (2%)	1 (2%)	2 (4%)	
Testes	(49)	(50)	(50)	(50)	(50)
ATROPHY					
Mineralization					
Germinal Epithelium, Atrophy					
Germinal Epithelium, Degeneration					
Interstitial Cell, Hyperplasia					
Tunic, Fibrosis					
		1 (2%)	1 (2%)	1 (2%)	1 (2%)
HEMATOPOIETIC SYSTEM					
Bone Marrow		(50)	(50)	(50)	(50)
Hematopoietic Cell Proliferation		1 (2%)	1 (2%)		
Hyperplasia		2 (4%)	2 (4%)	1 (2%)	
Pigmentation, Hemosiderin		2 (4%)	4 (8%)	9 (18%)	4 (8%)
Myeloid Cell, Hyperplasia		(4)	(7)	(11)	(3)
Lymph Node		1 (25%)	1 (14%)		
Inguinal, Hyperplasia			1 (14%)		
Inguinal, Pigmentation					
Lumbar, Congestion			1 (14%)		
Lumbar, Hyperplasia		1 (25%)	4 (57%)	1 (9%)	
Lumbar, Inflammation				4 (36%)	2 (67%)
Lumbar, Pigmentation				2 (18%)	
Renal, Congestion			1 (14%)	2 (18%)	1 (33%)
Renal, Hyperplasia				3 (27%)	
Lymph Node, Mandibular		(43)	(45)	(46)	(44)
Pigmentation, Hemosiderin			1 (2%)	1 (2%)	
Lymph Node, Mesenteric		(45)	(46)	(47)	(48)
Atrophy					1 (2%)
Congestion		1 (2%)	3 (7%)	1 (2%)	
Hematopoietic Cell Proliferation			3 (7%)		2 (4%)
Hyperplasia		1 (2%)	2 (4%)	3 (6%)	
Inflammation			2 (4%)		1 (2%)
Lymph Node, Mediastinal		(24)	(25)	(27)	(25)
Hyperplasia		1 (4%)			
Spleen		(50)	(50)	(49)	(49)
Atrophy		1 (2%)			
Hematopoietic Cell Proliferation		3 (6%)	4 (8%)	2 (4%)	
Hyperplasia		2 (4%)		1 (2%)	
Lymphoid Follicle, Atrophy				2 (4%)	1 (2%)
Lymphoid Follicle, Hyperplasia				2 (4%)	
Thymus		(37)	(37)	(39)	(34)
Atrophy		18 (49%)	11 (30%)	20 (51%)	11 (32%)
Cyst		1 (3%)			

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PEIRPT03
 Date: 04/23/96
 Time: 08:53:41

	B6C3F1 MICE MALE	CONTROL	75 PPM	250 PPM	750 PPM
INTEGUMENTARY SYSTEM					
Mammary Gland	(3)	(2)	(3)	(3)	(3)
Atrophy	1 (33%)	1 (50%)	2 (67%)	1 (33%)	
Skin	(50)	(50)	(50)	(50)	
Cyst					
Infiltration Cellular, Melanocyte	1	1 (2%)	1 (12%)	4 (8%)	3 (6%)
Inflammation	3 (6%)	6 (12%)	4 (8%)	3 (6%)	
Necrosis	1 (2%)	5 (10%)	2 (4%)	3 (6%)	
Ulcer	1 (2%)	1 (2%)	1 (2%)	1 (2%)	
Hair Follicle, Atrophy					
Prepuce, Degeneration					
Prepuce, Hyperplasia					
Prepuce, Inflammation					
Prepuce, Ulcer					
Sebaceous Gland, Cyst	1	1 (2%)	2 (4%)	2 (4%)	
MUSCULOSKELETAL SYSTEM					
Bone	(50)	(49)	(50)	(50)	
Vertebra, Degeneration	1 (2%)		1 (2%)	1 (2%)	
NERVOUS SYSTEM					
Brain	(50)	(50)	(50)	(50)	
Mineralization	21 (42%)	18 (36%)	19 (38%)	19 (38%)	
RESPIRATORY SYSTEM					
Larynx	(48)	(49)	(46)	(49)	
Foreign Body					
Hemorrhage	1 (2%)	4 (8%)	4 (9%)	1 (2%)	
Infiltration Cellular		1 (2%)	3 (7%)	2 (4%)	
Glands, Degeneration		1 (2%)	2 (4%)		
Glands, Inflammation	(50)	(50)	(50)	(50)	
Lung					
Congestion					
Hemorrhage					
Infiltration Cellular, Histiocyte	2 (4%)	1 (2%)	1 (2%)	1 (2%)	
Inflammation					
Pigmentation, Hemosiderin					
Thrombosis					
Alveolar Epithelium, Hyperplasia	1 (2%)	5 (10%)	2 (4%)	4 (8%)	
Alveolar Epithelium, Metaplasia		1 (2%)	2 (4%)	6 (12%)	

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Report: PEIRPT03
 Date: 04/23/96
 Time: 08:53:41

	B6C3F1 MICE MALE	CONTROL	75 PPM	250 PPM	750 PPM
RESPIRATORY SYSTEM - CONT					
Nose		(50)	(50)	(50)	(50)
Edema	1 (2%)				1 (2%)
Hemorrhage	7 (14%)	3 (6%)	4 (8%)	1 (2%)	1 (2%)
Inflammation	2 (4%)	1 (2%)	2 (4%)	1 (2%)	1 (2%)
Polyp, Inflammatory	3 (6%)		1 (2%)		
Nasoacral Duct, Inflammation					
Respiratory Epithelium, Inflammation					
Respiratory Epithelium, Metaplasia, Squamous		1 (2%)			
Trachea	(50)	(50)	(50)	(50)	(50)
Glands, Cyst					
Glands, Hemorrhage				1 (2%)	1 (2%)

SPECIAL SENSES SYSTEM

None

	URINARY SYSTEM	CONTROL	75 PPM	250 PPM	750 PPM
Kidney					
Degeneration	1 (2%)				
Inflarct	1 (2%)				
Inflammation	3 (6%)	5 (10%)	5 (10%)	5 (10%)	3 (6%)
Metaplasia, Osseous		1 (2%)			
Mineralization		1 (2%)			
Nephropathy	34 (68%)	38 (76%)	40 (80%)	40 (80%)	36 (72%)
Pigmentation, Bile	1 (2%)	8 (16%)	5 (10%)	4 (8%)	4 (8%)
Cortex, Cyst	1 (2%)	4 (8%)	3 (6%)	2 (4%)	2 (4%)
Papilla, Inflammation	3 (6%)				
Papilla, Necrosis					
Peritis, Dilatation	1 (2%)	2 (4%)	1 (2%)	3 (6%)	3 (6%)
Renal Tubule, Vacuolization			1 (2%)		
Ureter			2 (4%)	1 (2%)	1 (2%)
Degeneration				1 (50%)	1 (100%)
Inflammation				1 (50%)	(49)
Urinary Bladder	(48)	(50)	(49)		
Calculus Micro Observation Only	1 (2%)	1 (2%)	2 (4%)	2 (4%)	
Infiltration Cellular			1 (2%)	1 (2%)	
Inflammation			6 (12%)	6 (12%)	8 (16%)
Ulcer	7 (15%)	12 (24%)	1 (2%)	1 (2%)	1 (2%)
Muscularis, Inflammation					
Muscularis, Necrosis					

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
ETHYLBENZENE

Report: PEIRPT03
Date: 04/23/96
Time: 08:53:41

B6C3F1 MICE MALE	CONTROL	75 PPM	250 PPM	750 PPM
URINARY SYSTEM - CONT Serosa, Fibrosis			1 (2%)	

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

CORE STUDY

Report: PEIRPT05
Date: 04/23/96
Time: 09:10:56

RECEIVED
OPPT CBIC

96 JUL -3 AM 11:14

Facility: I. I. T. Research Institute
Chemical CAS #: 100-41-4
Lock Date: 10/02/92
Cage Range: All
Reasons For Removal: All
Removal Date Range: All
Treatment Groups: Include All

a Number of animals examined microscopically at site and number of animals with lesion

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED)
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

(a) NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED)

Report: PERPRT05
Date: 04/23/96
Time: 09:10:56

	B6C3F1 MICE FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
DISPOSITION SUMMARY					
Animals Initially in Study	50	50	50	50	50
Early Deaths	5	6	1	8	4
Moribund Sacrifice	9	6	1	1	9
Natural Death	1				
Accidentally Killed					
Survivors	34	38	40	37	
Terminal Sacrifice	1				
Natural Death					
Animals Examined Microscopically	50	50	50	50	50
ALIMENTARY SYSTEM					
Esophagus	(48)	(48)	(50)	(50)	(50)
Gallbladder	(44)	(44)	(44)	(46)	(46)
Intestine Large, Rectum	(49)	(48)	(49)	(47)	(47)
Intestine Large, Cecum	(49)	(47)	(48)	(44)	(44)
Intestine Small, Duodenum	(45)	(48)	(47)	(46)	(46)
Polyp Adenomatous					
Intestine Small, Jejunum	(46)	(46)	(46)	(45)	(45)
Intestine Small, Ileum	(47)	(47)	(47)	(46)	(46)
Liver	(50)	(50)	(50)	(50)	(50)
Cholangiocarcinoma					
Fibrosarcoma, Metastatic, Pancreas	1 (2%)	1 (2%)	1 (2%)		
Hemanglioma					
Hepatocellular Carcinoma	7 (14%)	4 (8%)	3 (6%)	10 (20%)	10 (20%)
Hepatocellular Carcinoma, Multiple					
Hepatocellular Adenoma	6 (12%)	8 (16%)	9 (18%)	2 (4%)	2 (4%)
Hepatocellular Adenoma, Multiple					
Pancreas	(50)	(50)	3 (6%)	4 (8%)	4 (8%)
Fibrosarcoma	1 (2%)				
Salivary Glands	(50)	(50)	(50)	(50)	(50)
Stomach, Forestomach	(50)	(49)	(48)	(50)	(50)
Squamous Cell Papilloma	1 (2%)	2 (4%)	1 (2%)	1 (2%)	1 (2%)
Stomach, Glandular	(50)	(49)	(48)	(50)	(50)
Serosa, Sarcoma, Metastatic, Uterus	1 (2%)	1 (2%)			
CARDIOVASCULAR SYSTEM					
Blood Vessel	(46)	(46)	(46)	(50)	(50)
Adventitia, Hepatocellular Carcinoma,	1 (2%)				
Heart	(50)	(49)	(50)	(50)	(50)

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: F11RPT05
 Date: 04/23/96
 Time: 09:10:56

	CONTROL	75 PPM	250 PPM	750 PPM
B6C3F1 MICE FEMALE				
CARDIOVASCULAR SYSTEM - cont				
Fibrosarcoma, Metastatic, Pancreas	1 (2%)			
ENDOCRINE SYSTEM				
Adrenal Cortex	(47)	(50)	(50)	(49)
Adenoma			1 (2%)	
Adrenal Medulla	(47)	(50)	(50)	(49)
Pheochromocytoma Malignant			1 (2%)	
Pheochromocytoma Benign	(50)	(50)	(50)	(49)
Islets, Pancreatic			1 (2%)	
Adenoma			1 (2%)	
Pituitary Gland	(48)	(49)	(47)	(49)
Pars Distalis, Adenoma	4 (8%)	8 (16%)	7 (15%)	5 (10%)
Pars Intermedia, Adenoma			1 (2%)	
Thyroid Gland	(50)	(50)	(50)	(50)
Follicular Cell, Adenoma	5 (10%)	4 (8%)	3 (6%)	4 (8%)
Follicular Cell, Adenoma, Multiple		2 (4%)		
GENERAL BODY SYSTEM				
Tissue NOS	(1)	(6)	(4)	(1)
Hemangiosarcoma		1 (17%)		
Leiomyosarcoma				
Abdominal, Osteosarcoma	1 (100%)	1 (17%)	1 (25%)	
Pelvic, Sarcoma				
GENITAL SYSTEM				
Clitoral Gland	(41)	(47)	(48)	(48)
Fibrosarcoma				1 (2%)
Ovary	(49)	(50)	(49)	(49)
Cystadenoma				2 (4%)
Fibrosarcoma, Metastatic, Pancreas	2 (4%)			
Granulosa Cell Tumor Benign	1 (2%)			
Uterus	(50)	(50)	(50)	(50)
Leiomyosarcoma	1 (2%)			
Polyp Stromal	2 (4%)	1 (2%)	1 (2%)	
Sarcoma				
Endometrium, Adenoma	1 (2%)	1 (2%)		1 (2%)
Myometrium, Hemangioma				
Vagina	(1)			
Leiomyosarcoma	1 (100%)			

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

ETHYLBENZENE
 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)

Report: PEIRPT05
 Date: 04/23/96
 Time: 09:10:56

	B6C3F1 MICE FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
HEMATOPOIETIC SYSTEM					
Bone Marrow	(48) (3)	(50) (7)	(50) (2)	(50) (5)	(50) (5)
Lymph Node					
Iliac, Hemangioma		1 (14%)			
Lumbar, Osteosarcoma, Metastatic, Tissue NOS		1 (14%)			
Renal, Hemangiosarcoma		1 (14%)			
Lymph Node, Bronchial	(32)	(40)	(29)		(38)
Fibrosarcoma, Metastatic, Pancreas	1 (3%)				
Hepatocellular Carcinoma, Metastatic, Liver	1 (3%)				
Lymph Node, Mandibular	(47)	(48)	(47)	(47)	(44)
Lymph Node, Mesenteric	(48)	(48)	(46)	(46)	(44)
Fibrosarcoma, Metastatic, Pancreas	1 (2%)				
Lymph Node, Mediastinal	(34)	(42)	(41)	(41)	(31)
Fibrosarcoma, Metastatic, Pancreas	1 (3%)				
Hepatocellular Carcinoma, Metastatic, Liver	1 (3%)				
Spleen	(50)	(50)	(50)	(50)	(49)
Capsule, Fibrosarcoma, Metastatic, Pancreas	1 (2%)				
Thymus	(42)	(44)	(45)	(45)	(46)
Hepatocellular Carcinoma, Metastatic, Liver	1 (2%)				
INTEGMENTARY SYSTEM					
Mammary Gland	(49)	(50)	(48)	(49)	
Carcinoma	1 (2%)	3 (6%)			
Skin	(50)	(50)	(49)	(50)	1 (2%)
Fibroma					
Fibrosarcoma		2 (4%)			
Fibrous Histiocytoma					
Hemangioma					
Squamous Cell Carcinoma		1 (2%)	2 (4%)		1 (2%)
Sebaceous Gland, Adenoma		1 (2%)	1 (2%)		
MUSCULOSKELETAL SYSTEM					
Bone	(49)	(50)	(50)	(50)	
Rib, Sarcoma, Metastatic, Tissue NOS					
Vertebra, Osteosarcoma					
Skeletal Muscle					
Carcinoma, Metastatic, Mammary Gland					
Rhabdomyosarcoma					

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESSONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PERIRPT05
 Date: 04/23/96
 Time: 09:10:56

	B6C3F1 MICE FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
NERVOUS SYSTEM					
Brain	Cerebrum, Oligodendrogloma Benign	(50) 1 (2%)	(50)	(50)	(50)
RESPIRATORY SYSTEM					
Larynx		(49) (50)	(49) (50)	(47) (49)	(48) (50)
Lung	Alveolar/Bronchiolar Adenoma	3 (6%)	4 (8%)	4 (8%)	8 (16%)
	Alveolar/Bronchiolar Adenoma, Multiple	1 (2%)	2 (4%)	1 (2%)	
	Alveolar/Bronchiolar Carcinoma				
	Carcinoma, Metastatic, Harderian Gland	1 (2%)			
	Carcinoma, Metastatic, Mammary Gland				
	Hepatocellular Carcinoma, Metastatic, Liver	3 (6%)	1 (2%)	2 (4%)	
	Osteosarcoma, Metastatic, Tissue NOS		1 (2%)	1 (2%)	1 (2%)
	Sarcoma, Metastatic, Tissue NOS			1 (2%)	
	Sarcoma, Metastatic, Uterus		1 (2%)		
	Squamous Cell Carcinoma, Metastatic, Lacrimal Gland				1 (2%)
Nose		(49)	(50)	(50)	(50)
	Carcinoma, Metastatic, Harderian Gland	1 (2%)			
Pleura		(1)			
	Hepatocellular Carcinoma, Metastatic, Liver	1 (100%)			
Trachea		(50)	(50)	(50)	(50)
SPECIAL SENSES SYSTEM					
Harderian Gland		(1)		(1)	(3)
	Adenoma			(100%)	3 (100%)
	Carcinoma	1 (100%)			
Lacrimal Gland					(1)
	Squamous Cell Carcinoma				1 (100%)
URINARY SYSTEM					
Kidney		(50)	(50)	(50)	(50)
	Cholangiocarcinoma, Metastatic, Liver		1 (2%)		
	Cortex, Fibrosarcoma, Metastatic, Pancreas	1 (2%)	(1)		
Uterus		(47)	(48)	(47)	(1)
Urinary Bladder					(49)

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a) Report: PEIRPT05
Study Type: CHRONIC Date: 04/23/96
Route: RESPIRATORY EXPOSURE WHOLE BODY Time: 09:10:56

B6C3F1 MICE FEMALE	CONTROL	75 PPM	250 PPM	750 PPM
--------------------	---------	--------	---------	---------

URINARY SYSTEM - cont
Serosa, Sarcoma, Metastatic, Uterus 1 (2%)

SYSTEMIC LESIONS

Multiple Organs	* (50)	* (50)	* (50)	* (50)
Leukemia Granulocytic	1 (2%)			
Lymphoma Malignant	3 (6%)	6 (12%)	5 (10%)	5 (10%)

* Number of animals with any tissue examined microscopically

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
Date: 04/23/96
Time: 09:10:56

	CONTROL	75 PPM	250 PPM	750 PPM
B6C3F1 MICE FEMALE				
TUMOR SUMMARY				
Total Animals with Primary Neoplasms (b)	29	38	31	38
Total Primary Neoplasms	44	58	50	60
Total Animals with Benign Neoplasms	20	26	27	28
Total Benign Neoplasms	27	34	39	40
Total Animals with Malignant Neoplasms	13	20	9	18
Total Malignant Neoplasms	17	24	11	20
Total Animals with Metastatic Neoplasms	5	5	5	2
Total Metastatic Neoplasm	18	9	4	2
Total Animals with Malignant Neoplasms				
Uncertain Primary Site				
Total Animals with Neoplasms Uncertain-Benign or Malignant				
Total Uncertain Neoplasms				

a Number of animals examined microscopically at site and number of animals with lesion

b Primary tumors: all tumors except metastatic tumors

NTP Experiment -Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
 Date: 04/23/96
 Time: 09:10:56

	B6C3F1 MICE MALE	CONTROL	75 PPM	250 PPM	750 PPM
DISPOSITION SUMMARY					
Animals Initially in Study	50	50	50	50	50
Early Deaths					
Moribund Sacrifice	6	2	5	6	6
Natural Death	15	12	13	13	13
Accidentally Killed	1			1	1
Survivors					
Terminal Sacrifice	28	36	31	30	
Natural Death			1		
Animals Examined Microscopically	50	50	50	50	50
ALIMENTARY SYSTEM					
Intestine Large, Cecum	(42)	(46)	(44)	(44)	(43)
Intestine Small, Jejunum	(44)	(46)	(44)	(44)	(43)
Epithelium, Carcinoma		1 (2%)			
Intestine Small, Ileum	(42)	(46)	(44)	(44)	(41)
Liver	(50)	(50)	(50)	(50)	(50)
Alveolar/Bronchiolar Carcinoma, Metastatic,					
Lung			1 (2%)		1 (2%)
Cholangiocarcinoma					
Fibrosarcoma, Metastatic, Stomach, Glandular	1 (2%)	1 (2%)			
Hemangioma	1 (2%)	1 (2%)			
Hemangiosarcoma					
Hepatoblastoma			1 (2%)		
Hepatocellular Carcinoma	17 (34%)	8 (16%)	11 (22%)	11 (22%)	10 (20%)
Hepatocellular Carcinoma, Multiple		1 (2%)	2 (4%)		
Hepatocellular Adenoma	11 (22%)	12 (24%)	17 (34%)	17 (34%)	17 (34%)
Hepatocellular Adenoma, Multiple	1 (2%)	4 (8%)			
Hepatocholangiocarcinoma	1 (2%)		1 (2%)	1 (2%)	1 (2%)
Mesentery	(1)		(1)		
Hepatocellular Carcinoma, Metastatic, Liver	1 (100%)		1 (100%)		
Hepatocholangiocarcinoma, Metastatic, Liver					
Pancreas					
Acinus, Hepatocholangiocarcinoma, Metastatic,					
Liver					
Stomach, Forestomach	(46)	(50)	(50)	(50)	(47)
Fibrosarcoma, Metastatic, Stomach, Glandular	1 (2%)	1 (2%)			
Squamous Cell Papilloma					
Stomach, Glandular	(46)	(50)	(50)	(50)	(47)
Tooth	1 (2%)		(1)	(1)	(1)
Odontoma				1 (100%)	

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
 Date: 04/23/96
 Time: 09:10:56

	CONTROL	75 PPM	250 PPM	750 PPM
B6C3F1 MICE MALE				
CARDIOVASCULAR SYSTEM				
Blood Vessel	(48)	(48)	(49)	(47)
Aorta, Fibrosarcoma, Metastatic, Stomach,	1 (2%)			
Glandular				
Aorta, Hepatocellular Carcinoma, Metastatic,	1 (2%)			
Liver				
Aorta, Sarcoma	1 (2%)			
Heart				
Alveolar/Bronchiolar Carcinoma, Metastatic,				
Lung				
Fibrosarcoma, Metastatic, Stomach, Glandular	1 (2%)			
Hepatocarcinoma, Metastatic, Liver				
Pericardium, Hepatocholangiocarcinoma, Metastatic, Liver				
Metastatic, Liver	1 (2%)			
ENDOCRINE SYSTEM				
Adrenal Cortex	(47)	(47)	(48)	(48)
Adenoma	1 (2%)			
Carcinoma				
Hepatocellular Carcinoma, Metastatic, Liver	1 (2%)			
Islets, Pancreatic				
Adenoma	1 (2%)			
Carcinoma				
Pituitary Gland				
Pars Distalis, Carcinoma	(44)	(45)	(45)	(48)
Thyroid Gland				
Follicular Cell, Adenoma	(50)	(50)	(50)	(47)
Follicular Cell, Adenoma, Multiple	3 (6%)	2 (4%)	1 (2%)	5 (10%)
Tissue NOS	(2)	(3)	(1)	(2)
Fibrosarcoma	1 (50%)			
Fat, Hepatocholangiocarcinoma, Metastatic,				
Liver				
Thoracic, Hepatocholangiocarcinoma, Metastatic, Liver				1 (100%)
Thoracic, Sarcoma	1 (50%)			1 (50%)

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
 Date: 04/23/96
 Time: 09:10:56

	B6C3F1 MICE MALE	CONTROL	75 PPM	250 PPM	750 PPM
GENITAL SYSTEM					
Epididymis					
Leiomyoma	(49)	(50)	(50)	(50)	(50)
Seminal Vesicle	(49)	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Hepatocholangiocarcinoma, Metastatic, Liver	(49)	(50)	(50)	(50)	(50)
Testes	1 (2%)	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Interstitial Cell, Adenoma					
HEMATOPOIETIC SYSTEM					
Bone Marrow					
Lymph Node	(50)	(50)	(50)	(50)	(50)
Fibrosarcoma, Metastatic, Stomach, Glandular	(4)	(7)	(11)	(11)	(3)
Pancreatic, Carcinoma	1 (25%)				
Popliteal, Hemangioma					
Renal, Cholangiocarcinoma, Metastatic, Liver					
Renal, Fibrocarcoma, Metastatic, Stomach,					
Glandular					
Renal, Hepatocholangiocarcinoma, Metastatic,					
Liver	1 (25%)				
Lymph Node, Bronchial	(14)	(24)	(27)	(27)	(27)
Alveolar/Bronchiolar Carcinoma, Metastatic,					
Lung					
Fibrosarcoma, Metastatic, Stomach, Glandular	1 (7%)				
Hepatocholangiocarcinoma, Metastatic, Liver					
Sarcoma					
Lymph Node, Mandibular	(43)	(45)	(46)	(46)	(44)
Sarcoma, Metastatic, Nose	1 (2%)				
Lymph Node, Mesenteric	(45)	(46)	(47)	(47)	(48)
Hepatocholangiocarcinoma, Metastatic, Liver					
Lymph Node, Mediastinal	(24)	(25)	(27)	(27)	(25)
Fibrosarcoma, Metastatic, Stomach, Glandular	1 (4%)				
Hepatocholangiocarcinoma, Metastatic, Liver	1 (4%)				
Sarcoma					
Spleen	(50)	(50)	(49)	(49)	(49)
Thymus	(37)	(37)	(39)	(39)	(34)
Alveolar/Bronchiolar Carcinoma, Metastatic,					
Lung					
Hepatocholangiocarcinoma, Metastatic, Liver	1 (3%)				
Sarcoma					

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
 Study Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY

		CONTROL	75 PPM	250 PPM	750 PPM	
B6C3F1 MICE MALE						
Skin		(50)	(50)	(50)	(50)	
Fibrosarcoma		1 (2%)		1 (2%)		
Hemangioma						
INTEGUMENTARY SYSTEM						
Skin		(50)	(50)	(50)	(50)	
Fibrosarcoma		1 (2%)		1 (2%)		
Hemangioma						
MUSCULOSKELETAL SYSTEM						
Bone		(50)	(49)	(50)	(50)	
Sternum, Fibrosarcoma, Metastatic, Stomach, Glandular		1 (2%)				
Skeletal Muscle		(2)				
Alveolar/Bronchiolar Carcinoma, Metastatic, Lung						
Fibrosarcoma, Metastatic, Stomach, Glandular		1 (50%)		1 (50%)		
Hepatocellular Carcinoma, Metastatic, Liver		1 (50%)		1 (50%)		
Hepatocholangiocarcinoma, Metastatic, Liver						
Nervous System		(50)	(50)	(50)	(50)	
Brain						
NERVOUS SYSTEM						
Nervous System		(50)	(50)	(50)	(50)	
Brain						
RESPIRATORY SYSTEM						
Lung		(50)	(50)	(50)	(50)	
Alveolar/Bronchiolar Adenoma		5 (10%)	8 (16%)	9 (18%)	15 (30%)	
Alveolar/Bronchiolar Adenoma, Multiple			1 (2%)	1 (2%)	1 (2%)	
Alveolar/Bronchiolar Carcinoma		2 (4%)	1 (2%)	5 (10%)	3 (6%)	
Cholangiocarcinoma, Metastatic, Liver			1 (2%)			
Fibrosarcoma, Metastatic, Stomach, Glandular		1 (2%)				
Hepatocellular Carcinoma, Metastatic, Liver		5 (10%)	3 (6%)	5 (10%)	3 (6%)	
Hepatocholangiocarcinoma, Metastatic, Liver		1 (2%)	1 (2%)	1 (2%)	1 (2%)	
Bronchiole, Polyp Adenomatous						
Mediastinum, Sarcoma						
Nose						
Pleura						
Sarcoma						
Alveolar/Bronchiolar Carcinoma, Metastatic, Lung		1 (2%)	(50)	(50)	1 (2%)	
Lung					1 (100%)	

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
Date: 04/23/96
Time: 09:10:56

		CONTROL	75 PPM	250 PPM	750 PPM
B6C3F1 MICE MALE					
SPECIAL SENSES SYSTEM					
Harderian Gland	(2)	(3)	(2)		
Adenoma	1 (50%)	3 (100%)	2 (100%)		
URINARY SYSTEM					
Kidney	(50)	(50)	(50)		
Alveolar/Bronchiolar Carcinoma, Metastatic,					
Lung					
Cholangiocarcinoma, Metastatic, Liver			1 (2%)		
Fibrosarcoma, Metastatic, Stomach, Glandular	1 (2%)				
Hepatocellular Carcinoma, Metastatic, Liver	1 (2%)	1 (2%)			
Renal Tubule, Adenoma			1 (2%)		
SYSTEMIC LESIONS					
Multiple Organs	* (50)	* (50)	* (50)	* (50)	
Leukemia Granulocytic	2 (4%)	2 (4%)	1 (2%)	1 (2%)	
Lymphoma Malignant			3 (6%)	2 (4%)	

* Number of animals with any tissue examined microscopically

NTP Experiment-Test: 05210-04 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Study Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
Date: 04/23/96
Time: 09:10:56

	CONTROL	75 PPM	250 PPM	750 PPM
B6C3F1 MICE MALE				
TUMOR SUMMARY				
Total Animals with Primary Neoplasms (b)	35	34	40	41
Total Primary Neoplasms	50	49	60	68
Total Animals with Benign Neoplasms	20	25	26	30
Total Benign Neoplasms	24	33	35	43
Total Animals with Malignant Neoplasms	21	15	21	16
Total Malignant Neoplasms	26	16	25	25
Total Animals with Metastatic Neoplasms	9	4	6	5
Total Metastatic Neoplasm	28	7	17	10
Total Animals with Malignant Neoplasms				
Uncertain Primary Site				
Total Animals with Neoplasms Uncertain-Benign or Malignant				
Total Uncertain Neoplasms				

a Number of animals examined microscopically at site and number of animals with lesion

b Primary tumors: all tumors except metastatic tumors

Best Available Copy